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ABSTRACT

In this study, the U.S. arts industry is conceptually defined and measured with respect to statistical size. The contribution and significance of the arts industry to the economy is then assessed within the context of national competitiveness and the emerging knowledge economy. Study findings indicate that the arts industry contributes between 5% and 10% of the Gross National Product. The arts industry also accounts for between 3% and 5% of all U.S. exports and for between 5% and 10% of all imports. Relative to the total U.S. trade deficit the arts industry contributes between 13% and 45% of the deficit. In addition, the concept of competitiveness has shifted towards a knowledge-based economy and been extended to embrace the 'soft side' that includes attitudes, education, motivation, and values, the arts are seen as one of the three principal domains of knowledge upon which national competitiveness depends. The arts industry may therefore be seen as a very important contributor to the U.S. economy. (MM)

The American Arts Industry

Size & Significance

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Chief Economist
Kultural Econometrics International

August 1992

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Executive Summary

In the study, the American arts industry was conceptually defined, measured with respect to statistical size and contribution to the economy and, finally, the significance of the arts was assessed within the context of national competitiveness and the emerging knowledge economy.

Definition

The arts industry is much broader than normally reported. If science, excluding the so-called human sciences, breaks down into three basic disciplines - biology, chemistry and physics; then art breaks down into four basic media of expression - the literary, media, performing and visual arts. Each uses a distinct medium of expression: the written word, the mechanically recorded sound and image, the live stage and the visual image. Each is, in turn, composed of many subdisciplines and schools based upon differences in style, technique and interpretation. In fact, artistic medium break down into as many subtle branches of expression as any of the physical sciences.

Like science, art is applied for many different purposes. The arts industry includes five distinct product segments. *The Fine Arts* are motivated by 'art-for-art's-sake'. They are the research and development segment of the industry and generate 'enlightenment'. It is in the fine arts that new talent and technique, scripts and scores, images and styles are created and developed. Some results of fine arts 'R&D' are, later in the product cycle, adopted by other parts of the arts industry as well as by non-arts industries fostering new product designs, fashions and styles. Like pure science, fine art is not financially self-supporting; it depends on public and private patronage. As in science, a thousand experiments are needed if one is to become a box office smash. The right to fail is an essential artistic and scientific freedom.

The Amateur Arts are motivated by self-actualization and self-realization, including realization of one's cultural heritage. The amateur arts are part of the public sector (the education system), the nonprofit sector (institutions like local little theatre) and the profit sector (private teachers). They generate 'education' involving: arts education about how to make art; education through art as a distinct way of understanding the world - its cultures, peoples, problems and its goods and services; and, art as a cost-effective medical therapy of growing importance to an aging population.

The Entertainment Arts generate 'enjoyment'. America currently leads the world in entertainment. This sector of the industry is dominated by for-profit international media conglomerates with interests in television, film, music, video and print media. In 1988, the five largest firms in the world had combined revenues of $45 billion accounting for 18% of the total $250 billion worldwide media industry. Entertainment programming is the second largest net export of the United States, after defense products. But unlike other major industries, entertainment spends *zero* percentage of its revenues on 'R&D', i.e. support for fine art.

The Applied Arts include advertising, architecture, the crafts, jewelry and fashion as well as product and interior design. They marry aesthetic to utilitarian values. They generate 'elegance'. From buildings to urban planning; from product design to effective advertising; from corporate 'imaging' to designer fashion: the applied arts have the most pervasive and significant economic implications of any sector of the arts industry

The Heritage Arts subsume each type of art as a residual of contemporary creation preserved for and/or by subsequent generations. They feed back on contemporary art by establishing standards and inspiring contemporary creators. They generate 'enrichment' marrying scarcity and aesthetic values. In fact, of all financial assets, between 1969 and 1989, heritage art had the highest rate of return.

Size

To measure the statistical size of the arts industry, three sets of data were used. These included: the Input/Output Matrix for the U.S. economy; Standard Industrial Classification data generated by the Department of Commerce; and, assorted business and financial statistics.

Input/Output Matrix

The input/output matrix is a standard tool of economics. It reports use (inputs) and production (outputs) of commodities. Inclusion of fabrics, textiles, clothing, furniture and leather goods, along with more obvious arts industries, is supported by a recent study of the American copyright industry and by Alfred Lord Marshall's observation that, in these industries, it is "every day more true that it is the pattern which sells the things". In order not to overstate the size of the arts industry, however, an 'arts factor' was applied to 'net out' non-arts components of 'marginal' arts industries. Accordingly, two ses of data are presented - gross and net.

In 1982, the arts industry generated nearly $304 billion in gross production, or 9.6% of Gross National Product (GNP). Applying the 'arts factor', net arts production was $162 billion, or 5.1% of GNP.

The arts industry made gross purchases of $164.8 or 5.2% of GNP from other industries. Applying the 'arts factor', net purchases amounted to almost $80 billion, or 2.5% of GNP.

The arts industry had gross sales of $262.1 billion or 8.3% of GNP, and net sales of $130.4 billion, or 4.1% of GNP.

Gross arts exports were $12 billion or 5% of total exports; net exports were $7 billion or 3% of total exports. Gross arts imports were $37 billion or 12% of all imports: net imports were $14 billion, or 5% of total imports. The gross arts trade deficit was $25 billion, or 45% of the total trade deficit; the net arts trade deficit was $7 billion, or 13% of the total trade deficit.

Standard Industrial Classification

The Standard Industrial Classification (SIC) is the framework through which economic statistics are reported by Department of Commerce. As with the input/output estimates, the 'arts factor' was applied to 'marginal' arts industries. Gross industrial output of the arts industry was $443 billion, or 8.5% of GNP; net output was $315 billion, or 6% of GNP.

Gross value added by the arts industry to the economy was $232 billion, or 4.4% of GNP; net value added was $166 billion, or 3.2% of GNP.

Gross employment in the arts industry was 5.2 million, or 4.4% of the total American workforce; net employment was 3.1 million, or 2.7% of the workforce.

Significance

Art & The Competitiveness of Nations

In the last decade, an old word has broken through into public consciousness: *competitiveness*. Competitiveness has, of course, always been with us. But, contemporary usage extends traditional mass market price competition to 'working smarter'. Competitiveness applies to all business enterprise, levels of government and nonprofit agencies and workers of the post-modern nation state. The drive towards national competitiveness is a major external force acting upon the arts industry.

Competitiveness promises prosperity but it is also a game in which some win and some lose. In fact, penetration of competitiveness into the marketplace of ideas has quenched the last flickering embers of the '60s generation's *revolution of rising expectations*.

Scientific Context

Competitiveness is linked with creation, transmission and timely application of new knowledge resulting in technological advance. Since the turn of this century, more than two-

thirds of growth in national income per worker is attributable to technological advance. But our understanding of its nature is strictly limited. This reflects that knowledge traditionally considered relevant for technological advance was restricted to the natural sciences and engineering. Only passing reference is usually made to 'softer' forms of 'knowing'.

But 'ways of knowing' are like the facets of a gemstone, some twinkle in a certain light while others remain dim or dark to view. Various attempts have been made to contextualize science by aligning it with other facets of knowledge and to thereby break, what some believe to be, Western civilization's Faustian bargain with science.

Political Context

Contextualization of science is not an 'academic' question. Scientific research today is being restricted by, among other forces, religious 'knowledge', e.g. fetal tissue and 'abortion' pill research.

New ways of knowing are, however, moving into focus. 'Women's knowledge' is now being *institutionalized* throughout society. Similarly, ecology is a 'holistic' vision firing the public imagination and leading to mass movements and institutional change. It rejects the reductive, mechanistic approach of the traditional physical sciences and offers instead a *relational* perspective of environmental systems.

Intellectual Context

There is also a deepening crisis in the global learning industry. Like other sectors, it is confronting a changing political context in which ecological, ethnic, religious and women's knowledge is being 'legitimized'. In addition, it faces five internal challenges.

First, there is growing questioning of the paramount position granted to the natural sciences and the claim to having their standards of validation apply - no matter the object or the subject of investigation. More generally, there is unrest about the hierarchical nature of politics within the learning industry.

Second, 'reality' is now being recognized as *socially constructed* but the central concepts of social life - choice and volition - appear incompatible with those of scientific prediction - laws of motion and probability.

Third, doubts have arisen due to the failure of Western assistance to many 'developing' nations suggesting scientific and technical knowledge was insufficient, on its own, to engender the developmental process, e.g. contrast experiences of tribal Africa and Confucian Asia.

Fourth, there is growing tension between vocation and education. At a time when industry and government is calling for more scientific and technical education, declining enrollment in these subject has, at best, bottomed out.

And fifth, there is increasing realization that learning is the ultimate resource but that the hierarchy of knowledge remains unchanged and has failed to accommodate important elements of learning other than literacy and numeracy.

From as early as Galileo, a traditional hierarchy of knowledge distinguished between three levels: primary, secondary and tertiary knowledge. Primary concerns *facts or quantities*. Secondary or *qualities* pertains to sensations such as colour, taste, smell and form as well as larger concatenations of these qualities. Tertiary knowledge, or *values*, are said not to be perceivable from the outside world but are rather innate ideas. Of the three, only primary knowledge is accessible to the scientific method.

Post-Modern Context

One way to refresh the traditional model of knowledge is to update it, for example, by using the famous image of the DNA double helix - the spiral ladder of life. The resulting model could be called 'the spiral ladder of competitiveness'. It assumes *three uses of knowledge*:

- knowledge-for-knowledge sake;
- knowledge for decision and profit; and,
- knowledge for democracy, i.e. an informed electorate is a prerequisite for effective democracy.

The model also assumes there are *three domains of knowledge*: the natural science and engineering (*NSE*); the humanities and social sciences (*HSS*); and, the arts.

NSE is generated by the scientific method characterized by replicability and objective testing. It corresponds to primary knowledge of quantities or facts. It involves a search for objective knowledge to understand and control the physical universe. Progressiveness is vertical, i.e. new knowledge displaces old, and by *intolerance of difference*, i.e. progress is a process of reducing error, replicability is all.

Both the humanities and the social sciences (*HSS*) are concerned with understanding the human world. For the humanities, this is essentially sufficient - understanding is all. For the social sciences, however, understanding can be extended to control, i.e. social engineering. *HSS* corresponds, roughly, with secondary knowledge of qualities. *HSS* also involves assessment of interactions between natural and human environments, i.e. *HSS* searches for reconciliation between objective and subjective truth.

HSS knowledge is generated by 'research'. While statistics are used in social science, a modified scientific method must be applied because even basic tenets of the social sciences cannot be quantitatively tested.

Furthermore, unlike *NSE*, *HSS* research is relative to time and space, i.e. *HSS* knowledge is not value-free. Progressiveness of *HSS* is not vertical. New knowledge does not necessarily displace the old. In fact, *HSS* progress is a spiral on which ascent is often preceded by descent back to the past, e.g. to the politics of Plato or to Shakespeare's insight into the human condition. Progress in *HSS* is also characterized by *increasing tolerance of difference*, i.e. all things being equal, the more one knows of different countries, cultures and peoples, then the more tolerant of differences one becomes.

If natural science is the study of the outer, material world; then art is the study of the inner, subjective world. If the sciences involve the search for objective truth, then the arts involve the search for subjective, value-laden truth. Scientific knowledge depreciates, while knowledge in the arts tends to appreciate through time. If science uses reductive methods, then art generates aesthetic knowledge - a *gestalt* sense *of wholeness* or, *of rightness*.

Metaphorically, the spiral ladder is held together by interactions of the three domains of knowledge. Each plays a role in defining a culture. *NSE* forms the hard rungs of the ladder permitting reality testing of values and beliefs, e.g. food taboos tend to fade fast in the face of famine. *NSE* provides a culture with the 'how to' change the material world. *HSS*, on the other hand, tells a culture 'what' is worth doing relative to it's value set.

In this way, *HSS* constrains *NSE*. Similarly, art contextualizes *NSE* and *HSS* providing them with emotional valuation of 'rightness' - ugly truths, however, too often hide from public view.

Economic Context

The three domains of knowledge generate distinct types of technology. In simple terms, physical science generates technology of the 'hand'; the humanities and the social sciences generate technology of the 'head'; and art generates technology of the 'heart'.

Intellectual property rights provide the legal foundation for the industrial organization of the arts and sciences. But legal systems are products of specific cultures and different cultures recognize differing creative rights. In this regard, and in addition to problems about agriculture, *GATT* negotiations are floundering due to these differences. This trade dispute has implications not only for the global knowledge industry but for cultural sovereignty of the post-modern nation state.

Advances in physical technology result from research in natural science and engineering. It is believed, but not 'scientifically' proven, that such research leads to growth in national wealth.

Organizational technology - to motivate workers and managers and then to marry them with financial capital plant and equipment creating a successful business enterprise - embodies humanities and social science knowledge. Two examples demonstrate. First, the cost of impaired worker and management motivation is estimated at between 20 to 40% of the net national product of the United States.

Second, the new democracies of the former Soviet empire are requesting not just capital from the West, but also managerial 'know how' to establish profit-making enterprise and a market economy.

Art is the source of aesthetic technology. Aesthetic technology is different from technical or functional design. Its impact on consumer behavior involves *elegance*. If a consumer, in any given culture, does not like the way a product looks, she or he may not even try it. Beyond product design, art plays another crucial role in the economy, advertising - perhaps the most pervasive aspect of the emerging knowledge economy, and one in which global advertising agencies are struggling to gain economies of world scale while confronting the cultural specificity of global markets.

The implication of the 'spiral ladder' is that creativity, *in all three domains of knowledge*, is the ultimate resource. Competitiveness can be achieved through creativity in *NSE*; it can be achieved by *HSS* research leading to liberalization of religious restrictions on business; it can be achieved by cultivating a distinctive aesthetic and establishing one's culture as a benchmark for global style and taste. At the individual creator level, how much is one Georgio Armani, Agatha Christie or Thomas Edison worth to a community or a nation? Can business, government and the learning industry cultivate an environment in which creative talent (in all domains of knowledge) can come to flower?

But creativity is also required of cultures if they are to become competitive. Hard competitiveness is constrained by 'soft' factors such as ethical, historical, linguistic, religious and social values. Together, these constraints create a distinct cultural 'mindscape'. Each culture needs to identify its own constraints and maximize within these limits. This requires 'honest' assessment of what is 'true' knowledge and what is cultural myopia. After assessment comes the hardest step: either a creative leap transcending limitations or acceptance of limitations with the hope that they may, perhaps, further long-term competitiveness.

In summary, the arts represent a very important industrial sectors of the American econmy. They contribute between 5% and 10% of Gross National Product, measured net and gross of marginal arts industries such as clothing and furniture, respectively.

The arts industry accounts for between 3% and 5% of all Ametrican exports, and for between 5% and 10% of all imports. Relative to the total U.S. trade deficit, the arts industry contributes between 13% and 45% of the deficit, measured net and gross of marginal arts industries such as clothing and furniture, respectively

Art is also one of the three principal domains of knowledge upon which national competitiveness depends. Traditionally, only natural science and engineering knowledge was thought to contributed to economic growth and development. But the concept of competitiveness has been extended to embrace the 'soft side' including attitudes, education, motivation and values reflecting the shift towards a knowledge-based economy. This extension allows for inclusion, within the calculus of the economy, of humanities and social scientific knowledge as well as the arts.

HHC, August 1992

Introduction

Art & Science

Once upon a time, our forebears spoke of 'the Arts and the Sciences' in a single breath. Many of our universities and colleges preserve this expression in their syllabi. And today, science stretches the popular imagination from the microscopic to the cosmic; from the flow of time to dimensions nonexistent since the Big Bang. Images of earth from space provide a truly global perspective - one world, one biosphere, one human race - and one CNN. Science is perceived by the public as a *seamless web* stretching from school to university to corporate lab to the 'high tech' home entertainment centre - the third most costly consumer purchase after a house and car.

The public is told repeatedly, by business and government, that more math and science education is required to preserve our jobs, competitiveness and freedoms. But, at the same time, public awareness is dawning that science is not, and has never been, *summum bonum* - all good. What science gives with one hand - economic growth and material prosperity, it seems to take with the other - pollution, stress, technological displacement, weapons of mass destruction, etc.

And where is art in contemporary America? To the religious right, art is the Golden Calf that Puritans fled England to escape. To the pragmatic center, recession and declining competitiveness is a clarion call to self-discipline, not self-indulgences such as 'art'. To the secular left, art is a weapon of class warfare exploding self-satisfied complacency with a 'poke-in-the-eye' exposing injustice with politically correct aesthetics. The bottom line: social, political and economic forces from the left, right and center are questioning the nature and future funding of the arts in America.

And not just external forces are at play. Since the art-for-art's-sake movement drew back, a century ago, from the dehumanizing Industrial Revolution (Henderson 1984: 46), the arts have become more specialized and alienated from main stream society. The whole has become lost in a forest of disciplines, subdisciplines, forms and schools: each eccentric; each alienated from the other and from society as a whole.

In this environment, 'the case for the arts', in public policy terms, is frustrated by sectoral arguments placed before the court of public opinion. The result: the arts now receive declining public and private patronage; are losing social status and political legitimacy; and, the public remains deaf, dumb and blind to the economic implications of the arts. What has happened? What did our ancestors know that we have forgotten? Why was artistic progress as important to them as scientific progress?

Cosmos & Technology

First, we have forgotten that *kosmos*, in Greek, means *the right placing of the multiple things of the world*; not an abstract, impersonal universe out there where no one has gone before. This *right placing of things* resulted in *beauty* - the comely coming together of parts. And the means to bring right order to the universe was art. The success of the Greeks in attaining aesthetic order is a great living legacy of the ancient world. While Greek 'science' has withered with time, classical Greek aesthetics remain, in the popular mind, the only 'true' art.

To the Greeks, beauty also had a moral imperative - *kalon kagathon* - the beautiful and the good. From this, the poet went on:

> Beauty is truth, truth beauty,- that is all
> Ye know on earth, and all ye need to know.
> John Keats, *Ode to a Grecian Urn*, Stanza 2.

But this 'truth' is alien to contemporary scientific culture; it is subjective, not objective and yet, nonethe-less, it is truth.

Unlike science, however, where objective tests can assess truth, it is the human heart and soul that judges artistic truth. This suggests *tolerance of difference* is a measure of artistic progress, while in science, progress is defined by revealing objective reality with less and less tolerance of difference.

Second, we have forgotten that *technology* is derived from the Greek *tekhne* meaning art and *logos* meaning reason, i.e. reasoned art. Science generates the technology of the 'head' while art generates the technology of the 'heart'. This is apparent throughout the economy and society as a whole. For example, advertising and consumer research have long since shifted from a rationalist 'information processing' to a 'hedonics' paradigm: people do not buy a *Jaguar* for transportation, they buy it to fulfill fantasy (Holbrook 1987). And, art is *the means* by which fantasy can be manipulated. In politics, the 'image/substance' controversy continually confonts the electorate. It is, of course, emotional manipulation of images, sounds and words, i.e applied art, that sways the swing voter.

In the follwing sections, the American arts industry will be consider from this *technological* perspective. It will be suggested that the cause of declining American global competitiveness resembles the scenario of the 1940 motion picture biography 'Edison the Man' starring Spencer Tracy and Charles Coburn: directed by Clarence Brown. In the final scene, the electric lights of New York City are to be switched on for the first time. But the two dynamos powering the system go out-of-synch. The great attempt almost fails: the building almost collapses. But Edison places a governor between the two and the lights go on. Today, as a hundred years ago, there are two dynamos driving economic competitiveness - the arts and sciences. In America, they are wildly out-of-synch: science threatens to become all: art to become nothing but a frill. Real economic growth, i.e. more disposable income in the pockets of the people, has not been attained for a generation. America must re-learn, as has Japan and Europe what our forebears knew: competitiveness, particularly in a global and polycultural market, requires a balance between art and science.

To begin the relearning process, the first step is to ask: What are the arts, and what is the American arts industry?

The Arts Industry

Before defining industry, it is necessary to define 'the arts'. This will be done using more contrasts between art and science.

Art and Science Revisited

If science is the study of the outer, material world; then art is the study of the inner, subjective world. If science has a 'pure' research or 'knowledge-for-knowledge's-sake' sector that is 'value free', then art has a corresponding 'art-for-art's-sake' sector which is 'value laden'. If science improves our physical comfort and wellbeing; then art improves our inner wellbeing including interpersonal and intercultural relationships

If science, excluding the so-called human sciences, breaks down into three basic disciplines - biology, chemistry and physics; then art breaks down into four basic media of expression - the literary, media, performing and visual arts. Each uses a distinct medium of expression: the written word, the mechanically recorded sound and image, the live stage and the visual image. Each medium is, in turn, composed of many subdisciplines and schools based upon differences in style, technqiue and interpretation. In fact, each artistic medium breaks down into as many varied and subtle branches of expression as any of the physical sciences.

Artistic knowledge, however, is unlike scientific knowledge in a number of ways. First, scientific knowledge tends to depreciate through time, e.g. Greek deductive science has been displaced by modern experimental science. In art, however, knowledge tends to appreciate through time. King Tut, Shakespeare and Bach still speak, still sell. In the media arts, Hollywood film libraries are now multi-million dollar assets. Maintaining classical repertoire, of all forms, provides continuing inspiration to contemporary creators; it establishes standards of excellence against which new work can be judged.

This 'religio' or linking back is embodied in the 'heritage arts' which conserve and preserve past and current artistic creation for subsequent generations. However, heritage art also imposes 'the deadening hand of the past'. Contemporary creators must compete not just with domestic and foreign contemporaries, but also with creative spirits of the past - such as Bach, Michelangelo and Shakespeare. Their works have been tried and tested through time; they enjoy advantages over contemporary creators facing the flood tide of history.

Second, the university plays a relatively recent and limited role as an institution for artistic 'higher' education. With the exception of literature (rhetoric and grammar), art was not part of the ancient or medieval liberal arts curriculum (Cantor 1969). It was only in the Renaissance that the fine art academy emerged as a formal center for visual art education. In theater and dance, there were no formal training institutions in the English-speaking world until the late 19th and early 20th centuries (Robinson 1982). The traditional independent status of the music conservatory highlights the distinctive patterns of education in art and science. It tends to be the professional nonprofit artistic enterprise which is the preeminent 'R&D' arts institution, not the university.

This difference between the pattern of education in art and science is reflected in a number of other ways. First, there is a well recognized gap between graduation from university (high in theory, low in practice) and attainment of professionalism in the arts: art is learned by doing; it is *experiential*. Thus old craft methods of apprenticeship and master classes survived the Industrial Revolution and remain the most effective method of professional training in the arts. Science, by contrast, is learned by studying

and applying a body of systematized knowledge and method.

Second, the difference between art and science is reflected by federal subsidies to universities. Ronald Hoffmann, professor of chemistry at Cornell University recently observed that the ratio of federal funding to science and art 'is about 500:1' at American universities: (Hoffman February 1992: 10,12).

Third, the direction of exploration in art and science is reversed :

> Whereas art begins with desired effects and finds causes to create these effects and no others, Science starts with causes and seeks effects to confirm or negate these causes. Art organizes ignorance by precepts while Science organizes knowledge by concepts. (Nevitt 1978: 7)

The Arts Industry

An industry is a group of buyers and sellers of similar or related goods and services. That the different art forms are related is evident in motion pictures where literary art, in the form of a script, combines with media art, in the form of a camera and microphone, to record images and sounds of the performing arts (including musicians off screen) all within a visual art construct called a 'set' or location.

Unlike other industries, art involves a 'personal' relationship between producer and consumer. This is evident in the 'star system' in the entertainment industries and the 'crown system' within repertoiry performing arts companies. A visit to a clothing store demonstrates that the 'name' of an artist designer can add significant 'value added' to a product, and to its price.

Factors of Production

Like all industries, the arts use three factors of production: capital, labor and technology. For purposes of this study only a cursory review can be provided.

Physical capital in the arts includes production facilities such as exhibition, performance and recording studios; stage, set, lighting and environmental equipment; production equipment such as printing presses and kilns; repertoire stored in archives, libraries, museums and the experience of performing artists; and, retail facilities from craft shops to motion picture theatres (Exhibit 1).

Labor in the arts includes artists, artisans, technicans, administrators, educators, impresarios, managers and support staff. It should be noted, that in the arts, like the airline industry, often more support staff is required on the ground than in the air.

Technology includes 'know how' called 'stagecraft' as well as various intellectual properties embodied in copyrights, trademarks, registered indusrial designs, patents and trade secrets.

Product Segmentation

Art can be used for many different purposes. Within the arts industry, there are five distinctive market segments. They can be differentiated the motiavtion of producers and consumers. In the arts industry, more perhaps than any other industry, such definitions are organic rather than mechanistic; in reality, they tend to blend one into one the other; they are not necessarily mutually exclusive. Accordingly, the taxonomy presented in this study provides only a rough desription of this tremendously complex industry (Exhibit 1).

Fine Arts

The fine arts are motivated by 'art-for-art's-sake'. They are the research and development segment of the industry. The fine arts generate 'enlightenment', i.e. they tend to shed light on the nature of the human condition and free us from prejudice. Again, the test of artistic progress tends to be increasing tolerance of difference, while in science, progress is measured by declining tolerance of difference - replicability is all.

It is in the fine arts that new talent and technique are developed; new scripts and scores are created; and new images and

Exhibit 1
THE AMERICAN ARTS INDUSTRY

Asset Value

Enrichment
1. marriage of scarity & aesthetic value
2. residual creation preserved for and/or by subsequent generations
3. preservation & financial security
4. conservation, standards & traditions
5. public, nonprofit and profit

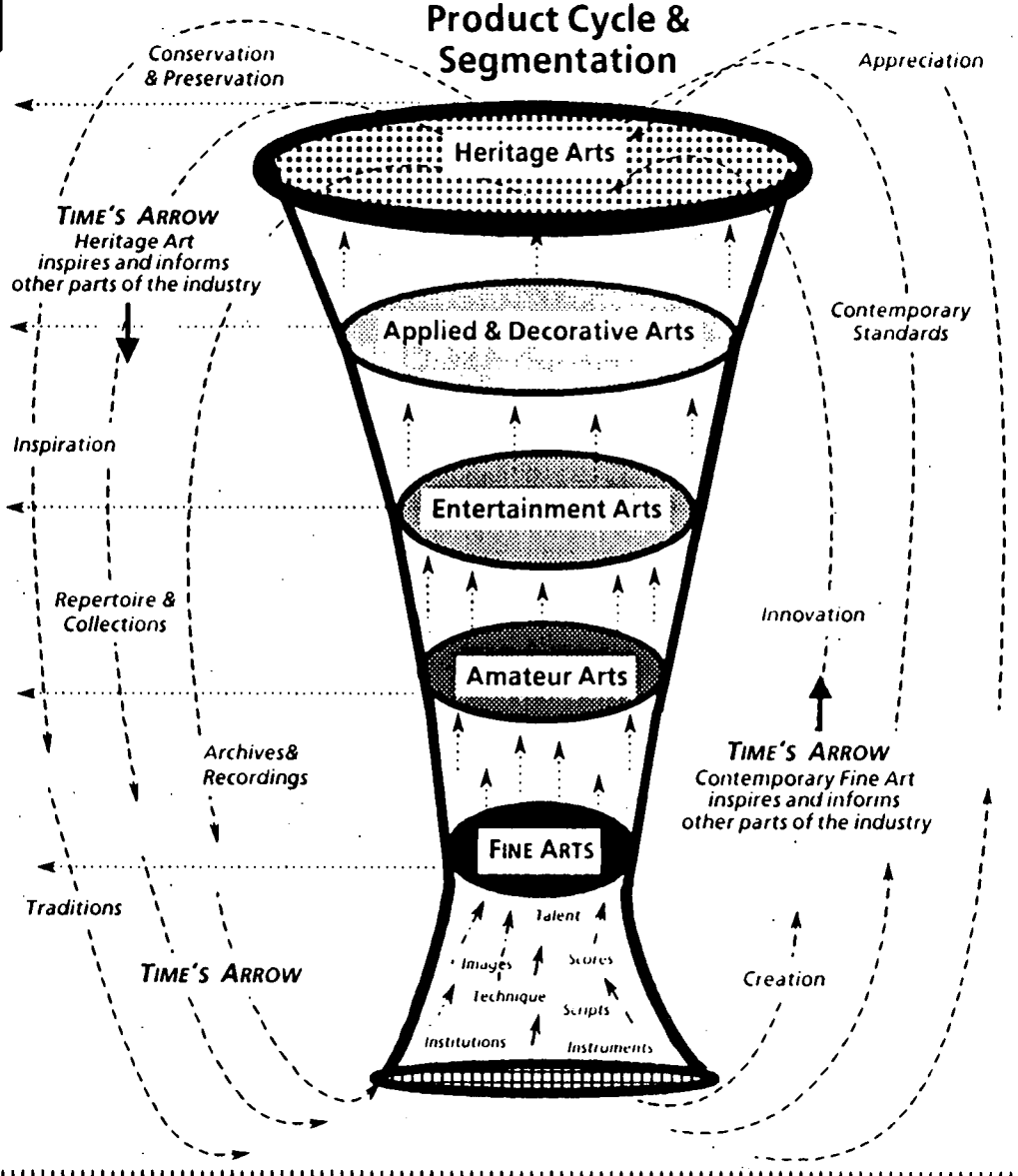
Elegance
1. marriage of aesthetic & utilitarian
2. style & persuasion
3. fashion, advertising, design, etc.
4. profit, some public & nonprofit

Enjoyment
1. amusement or diversion
2. for profit
3. audiovideo, broadcasting, live stage & publishing
4. increasingly global; 5 firms with 20% of world market.

Education
1. self-actualization and -realization
2. development of mental powers
3. educate & train artist, audience, consumer education, therapy
4. education thru art & art education
5. public, nonprofit & for profit

Enlightenment
1. arts-for-arts'-sake
2. shed light & free from prejudice
3. research & development
4. freedom of expression
5 standards of excellence
6. nonprofit plus box office, public & private patronage

Product Cycle & Segmentation



Factor of Production

Capital (K)
consuming, conserving and producing facilities & equip.; home entertainment center; personal, private and public archives, collections, libraries, galleries, museums & performing repertoire

Labour (L)
artists, artisans, technicians, administrators, culturcrats, educators, impresarios, managers & support personnel

Technology (T)
arts and craft 'know-how', new copyrights, trademarks, industrial designs, patents & trade secrets

LITERARY ARTS | MEDIA ARTS | PERFORMING ARTS | VISUAL ARTS

styles formed. Results of fine arts 'R&D' are, like the results of pure scientific research, sometimes adopted by for-profit enterprises - in and out of the arts industry. The results inspire new commercial designs, fashions and styles, e.g. *art nouveau* and *art deco* in the early part of the century.

Like pure science, fine art is not financially self-supporting. It operates in the nonprofit or independent sector depending on public and private patronage. As in science, a thousand boring plays (experiments) are needed if one is to become a box office smash. The right to fail is an essential artistic and scientific freedom: a freedom which requires patience on the part of patrons and an audience willing to take risks.

Amateur Arts

The amateur arts are motivated by self-actualization and self-realization including of one's own cultural heritage. Production is less concerned than the fine arts with pleasing or enlightening an audience than with developing the expressive abilities of the amateur artist (Chartrand, McCaughey 1989).

Amateur art is part of the public sector in the schools, the nonprofit sector in amateur theatre and other local artistic enterprise and the for-profit sector through private teachers. Amateur art provides at least four kinds of 'education' experiences:

i - arts education, i.e. education in how to create art;

ii - education *through* art as a distinct way of understanding the world - its cultures, its peoples and their problems;

iii - sophistication of the citizen consumer enhancing the ability to recognize quality product design (Scitovsky 1976); and,

iv - therapy within the health care system (Spencer1983).

Entertainment Arts

The 'entertainment industry' generates 'enjoyment' or amusement. In the entertainment arts, America currently leads the world. The entertainment arts are dominated by for-profit international media conglomerates with linked interests in television, film, music, video and print media. The five largest firms in the world had combined revenues of $45 billion in 1988 and accounted for 18% of the total $250 billion worldwide media industry (National Telecommunications and Information Administration 1990). The five firms were:

the News Corporation of America, controlled by Australian-born Rupert Murdoch:
Time-Warner of the USA:
Bertelsman AG of Germany;
Sony Corporation of Japan: and,
Hachette SA of France.

The fact that only one of the five largest firms is American owned, and furthermore, that only three of the largest seven Hollywood studios are American owned reflects a growing 'internationalization' of the entertainment industry.

It has, however, been reported that the second largest net export of the United States, after defense products, is entertainment programming (*The Economist*, March 11,1989: 65). But unlike other major American industries, the entertainment indusrty spends *zero* percentage of revenues on 'R&D', i.e. support for fine art (*Business Week* March 21, 1984: 236-284).

Applied & Decorative Arts

The applied arts include advertising, architecture, the crafts, jewelry and fashion as well as product and interior design. To a degree, these arts involve the use of style and persuasion. Production is motivated by the challenge of marrying aesthetic to utilitarian value. They generate 'elegance' defined as simple but effective, or as 'the best looking thing that works' (Cwi 1985). From buildings to urban planning; from product design to effective advertising; from corporate 'imaging' to designer fashion: the applied arts probably have the most

pervasive and significant economic impact of any sector of the arts economy.

Heritage Arts

The heritage arts can be subsumed by each type of art - literary, media, performing and visual - as a residual of contemporary and past creation preserved for and/or by subsequent generations. The heritage arts feed back on the contemporary arts (fine, amateur, entertainment and applied) by establishing standards and inspiring contemporary creators. The heritage arts generate 'enrichment' through the marriage of scarcity and aesthetic values. Of all financial assets, between 1969 and 1989, the highest rate of return accrued to works of heritage art (*The Economist* July 1,1989; Decenber 22, 1990). But, heritage art also imposes 'the deadening hand of the past'. Contemporary creators must compete not just with domestic and foreign contemporaries, but also with creative spirits of the past. Their works have been tried and tested through time; they enjoy advantages over contemporary creators who must push against the flood tide of history.Another assessment of the financial value of heritage arts is crime - one steals only that which is valuable. According to Thomas Hoving, former curator of the Metropolitan Museum of Art and president of Hoving Associates, theft of antiquities is the most lucrative of all international crimes: ounce for ounce, an antiquity can be more valuable than heroin and it yields this higher rate of return at less risk (Chartrand 1992a).

Having defined the industry, the question arises: how large is the American arts industry?

Size

Qualifications

To establish the size of the arts industry, one must use statistics, i.e. quantitative evidence. To use quantitative evidence to assess an inherently qualitative activity like the arts is problematic. First, quantitative evidence cannot capture the nuance and subtlety of art, e.g. in the visual arts: Dadaism, expressionism, futurism, impressionism, minimalism, realism - socialist and otherwise, surrealism, etc.

Second, even with respect to 'grosser' aspects of the arts such as revenues, expenditures and production of goods and services, available statistical series are insufficient depending on one's purpose, e.g. to measure the fine, amateur, entertainment, applied or heritage arts - something is either left out or, worse, something is left in.

Third, statistics, like most social scientific evidence, can, at best, provide but a medieval map dotted with dragons and mermaids (Paquet 1989) warning of what may lay beyond the map of our mundane mindscape (Maruyama 1985).

But like it or not, Pythagoras and magic numbers govern public and private life - now, as in the past. Whether as numerology :

> ...There were once eleven [Chinese] generals who had to decide whether to attack or retreat in a battle. They held a meeting and some were for attacking and others for retreat. They had a long strategical discussion, and finally took a vote: three were for attacking, and eight were for retiring, and they therefore decided to attack, because three is the number for unanimity! (Franz 1980: 83)

or, in measuring the size of the arts industry, we live in a society in which if you are not counted, you do not count (Gleick 1990).

The Data

Three sets of data will be used to measure the size of the American arts industry These are:

a) the Input/Output Matrix for the U.S. economy;
b) the Standard Industrial Classification of the Department of Commerce and related special tabulations prepared by the Department for the Research Division of the National Endowment for the Arts; and,
c) assorted business and financial statistics.

Input/Output Matrix

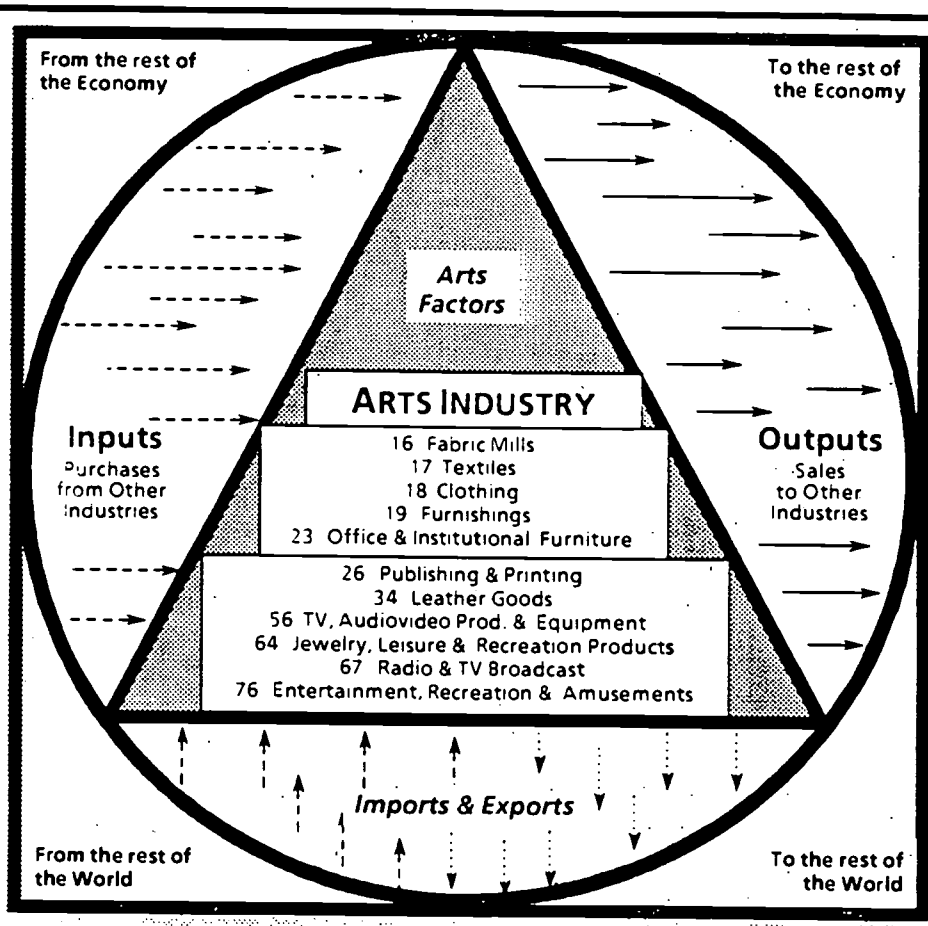
The input/output matrix is a standard tool of economic investigation. It reports the use (inputs) and production (outputs) of commodities (Exhibit 2). In this study, the 85 industry 'baseline' 1982 matrix will be used (Appendix A, Table 1d). In hardcopy format, the matrix runs to more than 180 pages of row after row of numbers. Until the 1990 Census is fully processed, the 1982 'baseline' remains the most accurate accounting of inputs to, and outputs from, the arts industry.

Like all statistical systems, the input/output matrix represents a compromise between detail and coverage. Some data systems provide detailed information concerning a specific industry, but such detail means they cannot be compared with other industries. Other statistical systems, including the input/output matrix, provide information that can be compared between industries, but lacks detail concerning the unique nature of any industry.

From the wide range of evidence available in the input/output matrix three indicators will be used:
- the final demand by consuming industriess. Final demand *by* the arts industry is called, for purposes of this study, "'Purchases'. Final demand for artistic goods and services by other sectors of the economy is 'Sales';
- total output by an industry which is called 'Production' ; and,
- exports and imports. In the input/output matrix, 12 arts-related industries can be identified:

Exhibit 2

THE AMERICAN ARTS INDUSTRY INPUT/OUTPUT MATRIX



No.	Name
16	Fabric Mills
17	Textiles
18	Clothing
19	Furnishings
22	Home Furniture
23	Office & Institutional Furniture
26	Publishing & Printing
34	Leather Goods
56	TV & Audiovideo Products & Equipment
64	Jewelry, Leisure & Recreation Products
67	TV & Radio Broadcasting
76	Entertainment, Recreation & Amusements

Some are clearly part of the arts such as publishing and printing (26), radios, TVs, tapes and records (56), jewelry, leisure and recreational goods (64), broadcasting (67) and entertainment and amusement services (76). Other industries appear, at first glance, to be unrelated to the arts, e.g. fabric mills (16), textile (17), clothing (18), furnishings (19), furniture (22 & 23) and leather goods (34). What these 'marginal' arts industries share in common is art as a significant factor of production. At the beginning of the century, the noted economist, Alfred Lord Marshal, recognized the importance of art in these industries:

> ... the development of the artistic faculties of the people is in itself an aim of the very highest importance, and is becoming a chief factor of industrial efficiency.... Increasingly wealth is enabling people to buy things of all kinds to suit the fancy, with but a secondary regard to their powers of wearing; so that in all kinds of clothing and furniture it is every day more true that it is the pattern which sells the things (Marshall 1920: 177-8).

Inclusion of fabrics, textiles, clothing and furniture is also supported by a recent study of the American copyright industry, which is used extensively in this report (Swiek, Furchtgoff-Roth 1990). Swiek and Furchtgoff-Roth, drawing upon work of the U.S. Copyright Office, provide a 'copyright' factor estimating the copyright part of all industries including clothing and furniture (U.S. Copyright Office 1984). The Copyright Office used the 1977 input/output matrix to estimate the copyright component for each American industry. Swiek and Furchtgoff-Roth updated and adjusted these estimates (Swiek, Furchtgoff-Roth 1990: Appendix B).

For purposes of this study , this 'copyright' factor is used as a surrogate or *proxy* for artistic production in any industry. The 'arts factor' generates a conservative estimate of the economic size of the American arts industry for three reasons.

First, much of the art used in industries does not enjoy copyright protection. Rather, much of the art used is in the 'public domain', i.e. copyright has lapsed through time. Public domain properties are, nonetheless, artistic in nature and contribute to competitiveness.

Second, royalty payments for copyrighted works are excluded from the estimates of copyright industries in the Swiek and Furchtgoff-Roth study and that of the Copyright Office. This means "our measures of the core and total copyright industries consistently understate their value to the economy" (Swiek, Furchtgoff-Roth 1990: B-5).

Third, it is industrial design and trademarks that embodies most artistic inputs in clothing, furniture and related industries. It is these forms of intellectual property rights that provide protection (Andrews 1990: E20). The 'arts factor' proxy does not include industrial design and trademarks. Furthermore, as economist Robert Reich, in his recent PBS series *Made in America*, observed, design in much of the American clothing industry (sales of $142 billion a year) is American even if 50% of the sewing and stitching is done in Third World countries. To paraphrase one observer in the program: 'American mothers do not want their daughters sowing in sweatshops'. Reich pointed out that in a truly global

economy, the question is what part of production does a nation wants to capture - low paying, labor intensive ones like sowing, or high paying, creative jobs like design?

The importance of the arts to an increasingly design-conscious American business cannot be underestimated. With respect to clothing and furniture, it plays a role like 'research and development' in the sciences - it contributes new styles. In dollar terms, research, in both science and art, involves a tiny amount of resources compared to existing capital stock and labour force. However, it is a catalyst stimulating change and improvement in the quality and efficiency of capital and labour (Shapiro 1970: 490-1).

Accordingly, in this study account is taken of both the 'gross' value of production in marginal or fringe arts industries and the 'net' value attributable only to the arts. The inclusion of 'gross' estimates is appropriate because they demonstrate how much production is dependent on artistic 'R&D'.

There are other industries which are arts-related but which are not included in the estimate of the size of the arts industry, e.g. accounting, advertising and other services (73). Inclusion or exclusion of potentially 'marginal' arts industries was made based upon the numberof arts-related commodities reported by the Department of Commerce under each industry, as well as the *reasonableness* of their inclusion.

Before estimating the size of the arts industry, certain qualifications are necessary. The first concerns the difference between an industry and a commodity. The arts industry, like other industries, produces more than one type of good or service. For example, the publishing and printing industry produces some paper products for internal use. Accordingly, total publishing and printing is greater than the sale of published and printed materials to other industries. In this study, only *sales* of published and printed goods and services by the arts industry are reported. This means that production for internal use by the arts industry is not reported and reported estimates understate the size of the industry.

Similarly, industries such as rubber products, publish and print material for their own internal use. Such internal production by *non-arts* industries is not reported. This causes discrepanices in reported results, e.g. publishing and printing industry output was

Exhibit 3
THE AMERICAN ARTS INDUSTRY
Gross & Net Production, Purchases from & Sales to All Other Industries *
In Billions of Dollars
1982

		Production		*Purchases*		*Sales*	
	Arts Factor	Gross	Net	Gross	Net	Gross	Net
Arts Industry	na	304.0	161.8	164.8	79.9	262.1	130.4
16 Fabric Mills	0.007	26.8	0.2	14.3	0.1	19.4	0.1
17 Textiles	0.005	10.2	0.1	7.4	...	8.6	...
18 Clothing	0.005	53.7	0.3	22.8	0.1	53.0	0.3
19 Furnishings	0.020	9.8	0.2	6.0	0.1	11.5	0.2
22 Home Furniture	0.020	12.3	0.2	7.6	0.2	12.3	0.3
23 Office & Institutional Furniture	*0.020*	*10.7*	*0.2*	*5.8*	*0.1*	*3.0*	*0.1*
26 Publishing & Printing	1.000	53.6	53.6	27.1	27.1	46.1	46.1
34 Leather Goods	0.005	7.2	...	4.0	...	11.0	0.1
56 TV & Audiovideo Prod. and Equip.	1.000	50.3	50.3	23.5	23.5	32.7	32.7
64 Jewelry, Leisure & Recr Prod.	0.500	25.7	12.9	15.3	7.7	26.8	13.4
67 TV & Radio Broadcasting	*1.000*	*1.1*	*1.1*	*8.0*	*8.0*	*1.0*	*1.0*
76 Entertain, Recreate & Amuse	1.000	42.7	42.7	13.0	13.0	36.1	36.1

Source: Appendix A, Table 1
* includes public enterprise and personal spending.

$50.3 billion but sales were only $46.1 billion (Exhibit 3).

Second, anomalies will become apparent with respect to office and institutional furniture (23) and TV & radio broadcasting (67) . In both, reported sales are less than purchases from other industries. This partially results from practices peculiar to these industries, e.g. in broadcasting sales are usually reported under the advertising industry. In both cases, however, questions have been put to officials of the Department of Commerce. Responses were not available in time to be incorproated in this report .

Domestic Production

In 1982, the arts industry generated nearly $304 billion in gross production, or 9.6% of Gross National Product (GNP) (Exhibit 3). Applying the 'arts factor', net arts production was $162 billion, or 5.1% of GNP (Appendix A, Table 1).

The arts industry made purchases of $164.8 billion, or 5.2% of GNP, from other industries. Applying the 'arts factor', net purchases were almost $80 billion, or 2.5% of GNP. Other industries accounted for 98.1%, the public sector for 1.6%, and a residual of 0.3% from other sectors of the economy.

In 1982, arts industry gross sales to other sectors of the economy were $262.1 billion, or 8.3% of GNP. Applying the 'arts factor', net sales were $130.4 billion, or 4.1% of GNP. Other industries accounted for 30.5% of sales: the public sector for 9.1%; and, individuals and households, 60.5%.

Exports & Imports

In 1982, total U.S. exports were $252 billion, or 8% of GNP. Gross arts exports were $12 billion, or 5% of total exports. Applying the 'arts factor', net arts exports were $7 billion, or 3% of total exports (Appendix a, Table 1 c).

In 1982, total imports amounted to $306 billion, or almost 10% of GNP. Gross arts imports were $37 billion, or 12% of all imports. Applying the 'arts factor', net arts imports were $14 billion, or 5% of total imports.

In 1982, the United States had a trade deficit with the rest of the world of $55 billion, or 1.7% of GNP. The gross arts trade deficit was $25 billion, or 45% of the total trade deficit. Applying the 'arts factor', the net arts trade deficit was $7 billion, or 13% of the total American trade deficit.

Exhibit 4
THE AMERICAN ARTS INDUSTRY
Gross & Net Exports & Imports *
In Millions of Dollars
1982

		Exports		*Imports*		*Trade Balance*	
	Arts Factor	Gross	Net	Gross	Net	Gross	Net
Arts Industry	na	12012.1	7049.4	37462.4	14164.0	-25450.2	-7120.4
16 Fabric Mills	0.007	1116.0	7.8	1726.8	12.1	-610.8	-4.3
17 Textiles	0.005	699.2	3.5	481.6	2.4	217.6	1.1
18 Clothing	0.005	978.0	4.9	11167.1	55.8	-10189.1	-50.9
19 Furnishings	0.020	435.1	8.7	456.4	9.1	-21.3	-0.4
22 Home Furniture	0.020	292.7	5.9	842.8	16.9	-550.1	-11.0
23 Office & Institutional Furn.	*0.020*	*311.9*	*6.2*	*699.8*	*14.0*	*-387.9*	*-7.8*
26 Publishing & Printing	1.000	1403.4	1403.4	638.4	638.4	765.0	765.0
34 Leather Goods	0.005	221.4	1.1	4292.3	21.5	-4070.9	-20.4
56 TV & AV Prod. & Equip.	1.000	3890.8	3890.8	9574.1	9574.1	-5683.2	-5683.2
64 Jewelry, Leisure & Recr Prod.	0.500	1904.8	952.4	7526.8	3763.4	-5622.0	-2811.0
67 TV & Radio Broadcasting	*1.000*	*0*	*0*	*0*	*0*	*0*	*0*
76 Entertain, Recreate & Amuse.	1.000	758.8	758.8	56.3	56.3	702.5	702.5
USA Total	na	251527.6	na	306495.5	na	54967.9	na

Source: Appendix A, Table 1
* includes public enterprise and personal spending.

Standard Industrial Classification

The Standard Industrial Classification (SIC) is the primary framework through which economic statistics are collected and reported by the Department of Commerce. SIC was developed by the United States after it adopted the International Standard Industrial Classification produced by the United Nations Statistical Office following the Second World War.

The SIC is used to collect statistical information concerning all types of economic enterprise - public and private. In theory, the SIC provides detailed and standardized statistics concerning all industries including the arts. However, the arts industry is not explicit, nor are many of its component parts reported in the SIC. There are several reasons. First, while the SIC identifies many specific parts of the arts industry, some relevant statistics are simply not collected, generally because of resource constraints.

Second, some relevant arts statistics that are collected but are then compiled at a level of aggregation that does not permit identification of arts-related activity.

Third, SIC was not designed with art in mind. In fact, excepting special tabulations prepared by Department of Commerce for the National Endowment for the Arts, there is no published breakout of profit and nonprofit arts.

Fourth, the service industries as a whole, including much of the arts industry, are poorly reported - relative to manufacturing - by existing data collection, partially for resource reasons. This failure has, however, implications for economic policy because the vast majority of employment is now in the service sector.

Nonetheless, a significant amount of information concerning the arts industry can be derived from the SIC. This has the advantage of providing information comparable to other industries.

Furthermore, recent developments make the SIC an increasingly important instrument for international comparisons of national arts industries. Developments include a recent US/Canada Concordance (Statistics Canada 1991) and an anticipated EEC/Canada Concordance concerning national industrial statistics.

In this analysis, the SIC arts industry includes the following:

INDUSTRY	SIC Code	Arts Factor
Literary Arts		
Bookbinding	2789	1.000
Book Printing	2732	1.000
Book Publishing	2731	1.000
Business Forms	276276	0.050
Commerial Printing	2752/54/59	1.000
Greeting Cards	277	1.000
Music & Misc. Publishing	2741	1.000
Newspapers	2711	1.000
Periodicals	2722	1.000
Platemaking Services	2796	1.000
Stationary	2678	0.050
Typesetting	2791	1.000
Media Arts		
Advertising	731	1.000
Cable TV & Satellite Comm.	48	1.000
Motion Picture Prod & Dist.	781/2	1.000
Motion Picture Theatres	783	1.000
Radio & TV Broadcasting	483	1.000
Radio & TV Receiving Sets	3651	1.000
Records & Tapes	3652	1.000
Video Tape Rentals	7841	1.000
Performing Arts		
Theatrical Productions	792	1.000
Other Amusements	791;799;84	0 500
Visual Arts		
Apparel	231-8;39996	0.005
Commercial Photo & Art	7335/6	0.100
Costume Jewelry	3961	0 500
Dolls	3942	0.500
Fabric	2211-31;2261-2	0.007
Games & Toys	3944	0.500
Home Furnishings	2392	0.020
Photofinishing Labs	7334; 7384	0.100
Photographic Studios	722; 729	0.300
Precious Jewelry	3911	0.100

SIC arts industry indicators for 1989 are reported in Exhibits 5, 6 & 7. Indicators include industrial output, value added and employment. Industrial output refers to value of shipments of all goods produced or purchased for resale. Value added refers to the difference between the value of output and the cost of raw materials, including light and heat, but excluding salaries and wages. Value added is the most important indicator

of the contribution of the arts to the American economy. Data for 1977 and 1985 are displayed in Appendix 1, Table 2.

As with the input/output estimate, the copyright factor is used to estimate the arts component of marginal arts industries such as clothing (Swiek, Furchtgoff-Roth 1990). As noted above, this 'arts factor' generates a conservative estimate of the economic size of the arts industry.

Industrial Output

In 1989, gross output of the arts industry was $443 billion, or 8.5% of GNP. When the arts factor was applied, net arts industry output was $315 billion, or 6% of GNP. The literary arts had the largest gross output ($155 billion, or 3% of GNP) but the second highest net output ($146 billion, or 2.8% of GNP) after the media arts ($147 billion, slightly more than 2.8% of GNP). The most dramatic impact of the arts factor was in the visual arts which had gross output of $118 billion, or 2.2% of GNP, but net output of only $7.4 billion, or 0.1% of GNP.

Value Added

In 1989, the gross value added of the arts industry was $232 billion, or 4.4% of GNP. When the arts factor was applied, net value added was $166 billion, or 3.2% of GNP. The literary arts had the highest gross value added ($101 billion, or 1.9% of GNP) and the highest net value added ($96 billion, or 1.8% of GNP). Again the most dramatic impact of the arts factor was in the visual arts where gross value added was $61 billion, or 1.2% of GNP, but net value added was only $5 billion, or 0.1% of GNP.

Employment

In 1989, gross employment in the arts industry was 5.2 million, or 4.4% of the total American workforce. When the arts factor was applied, net arts employment was 3.1 million, or 2.7% of the workforce. The literary arts had the largest gross employment (1.6 million, or more than 1.3% of the workforce) and the highest net employment (1.5 million, or 1.3% of the workforce). Again, the most dramatic impact of the arts factor was in the visual arts where gross employment was 1.8 million, or 1.6% of the workforce, but net employment was less than 0.2 million, or 0.1% of the workforce.

In summary, gross arts industry output in 1989 accounted for 8.5% of GNP; value added, 4.4%; and employment, 4.4% of the total American workforce. Net arts industry output accounted for 6% of GNP; 3.2% of value added; and 2.7% of the total American labour force.

Exhibit 5
THE AMERICAN ARTS INDUSTRY
Standard Industrial Classification Industrial Output
In Billions of Dollars
1989

	Gross	% GNP	Net *	% GNP
ARTS INDUSTRY	443.0	8.5%	314.5	6.0%
Literary Arts	155.2	3.0%	145.6	2.8%
Media Arts	147.2	2.8%	147.2	2.8%
Performing Arts	22.9	0.4%	14.3	0.3%
Visual Arts	117.7	2.2%	7.4	0.1%
Gross National Product	5234.0	100.0%	5234.0	100.0%

Source: Siwek, S.E., Furchtgoff-Roth, H.W., *Copyright Industries in the U.S. Economy, Economists Incorporated*, Nov. 1990.
* Art Factor applied to net out strictly arts-related activity. Appendix 1, Table 2

Exhibit 6

THE AMERICAN ARTS INDUSTRY
Standard Industrial Classification Value Added
In Billions of Dollars
1989

	Gross	% GNP	Net *	% GNP
ARTS INDUSTRY	232.1	4.4%	165.9	3.2%
Literary Arts	100.9	1.9%	95.9	1.8%
Media Arts	57.4	1.1%	57.4	1.1%
Performing Arts	13.2	0.3%	8.0	0.2%
Visual Arts	60.6	1.2%	4.6	0.1%
Gross National Product	5234.0	100.0%	5234.0	100.0%

Source: Siwek, S.E., Furchtgoff-Roth, H.W., *Copyright Industries in the U.S. Economy*, *Economists Incorporated*, Nov. 1990.

* Art Factor applied to net out strictly arts-related activity, Appendix 1, Table 2

Exhibit 7

THE AMERICAN ARTS INDUSTRY
Standard Industrial Classification Employment
In Thousands
1989

	Gross	% Workforce	Net *	% Workforce
ARTS INDUSTRY	5213.0	4.4%	3131.1	2.7%
Literary Arts	1568.4	1.3%	1509.5	1.3%
Media Arts	965.8	0.8%	965.8	0.8%
Performing Arts	844.4	0.7%	495.3	0.4%
Visual Arts	1834.4	1.6%	160.5	0.1%
Workforce	117342.0	100.0%	117342.0	100.0%

Source: Siwek, S.E., Furchtgoff-Roth, H.W., *Copyright Industries in the U.S. Economy*, *Economists Incorporated*, Nov. 1990.

* Art Factor applied to net out strictly arts-related activity, Appendix 1, Table 2

Sketches

In this section, statistical sketches of the five segments of the arts industry will be drawn using the input/output matrix, SIC data as well as assorted business and other statistics. While not exhaustive, these sketches provide some measure of the economic size of each art form.

Literary Arts

The literary arts mark the dawn of 'history'. More than five thousand years ago, humanity invented writing as a means of recording thought and the spoken word. Originally, writing was used to keep inventories of royal and sacred property but it quickly became used to record stories and myths. It crystallized or fixated in material form the accumulated wisdom of the preceding oral age.

The modern literary arts began with the first engine of mass production: the printing press introduced in the 15th century. For the first time, the written word became widely available to the whole of society at a cost significantly lower than that possible with tedious hand copying of texts. In the time it took one monk to produce a single copy by hand, the printing press could produce hundreds, then thousands and finally millions of copies. The impact of this invention can not be underestimated. It was responsible for the spread of knowledge; it spawned the first mechanically produced mass consumer good - the book; it generated the first modern art industry - publishing; it led, directly, to the Industrial Revolution that shook the world in the 19th century. But despite the 'industrial' manufacture of books, the literary arts remain essentially a 'solitary art' carried out by an individual writer - wherever she or he may be.

Using the input/output matrix (Exhibit 3), the industrial output of the publishing and printing industry in 1982 amounted to nearly $54 billion, or 1.7% of Gross National Product (GNP). Purchases by the publishing and printing industry from other domestic industries amounted to $27 billion. Sales to other industries amounted to $46 billion. With respect to the trade balance, the publishing and printing industry enjoyed a $765 million dollar surplus (Exhibit 4).

Turning to the 1989 SIC data (Exhibit 5), the literary arts had gross industrial output of $155 billion, or 3% of GNP. When the arts factor was applied, net industrial output was $146 billion, or 2.8% of GNP.

Gross value added to the U.S. economy by the literary arts amounted to $101 billion, or 1.9% of GNP. When the arts factor was applied, net value added was $96 billion, or 1.8% of GNP (Exhibit 6).

Gross employment in the literary arts was 1.6 million, or 1.3% of the total American workforce. When the arts factor was applied, net employment was 1.5 million, or 1.3% of the total workforce (Exhibit 7).

Turning to a range of miscellaneous data sources, the value of shipments of newspapers, periodicals and books in 1991 was forecast at $77 billion, of which newspapers accounted for 47%: periodicals, 30%; and books, 22%.

Total employment in the newspaper, periodical and book industries amounted to 638,000; newspapers accounted for 68%; periodicals, 19%; and books, 13% (Appendix A, Table 3 a).

With respect to the book industry, it is projected that in 1991 total sales were nearly $18 billion of which domestic sales accounted for 93%, and exports, 7%. Overall, the value of book sales, domestic and export, were projected to have grown 8% over the previous year (Appendix A, Table 3 b).

More detailed information concerning book exports to selected countries shows that in 1990, exports amounted to $1.4 billion and imports, $0.9 billion creating an American

trade surplus in books of $0.5 billion. It should be noted, however, that this surplus was dependent on exports to Canada which accounted for 47% of all book exports. If the Canadian market was excluded, then the U.S. book industry was in a trade deficit position with the rest of the world (Appendix A, Table 3 c).

One measure of the competitiveness of the American book industry is the number of new titles published each year. In 1988, some 400,000 new titles were published in 13 major book publishing countries, including the United States. West Germany accounted for nearly 18% of new titles; the United Kingdom, nearly 16%; the United States, 13%; and South Korea, 11% (Appendix A, Table 3 d).

Media Arts

The media arts are the great artistic contribution of the 20th century. Essentially, the media arts involve sound and image recording. They use artistic techniques that are distinct from those available to the other art forms, e.g. concurrent action, cut, edit, fade-out, re-take and voice over. With this new medium, the performing arts can be 'canned', 'carried' and exploited, wholesaled and retailled, like other goods and services.

The media arts also provide contemporary performing artists with something only literary and visual artists enjoyed in the past - life after death; life, not as a ghost on another plane, but as a shadow on the silver screen. There will never again be a Richard Burton, but his image, his voice, and his performances will endure, like the plays of Shakespeare, part of the social genetic, the extra-somatic knowledge that is the "stuff" of culture.

An important change in social behavior has resulted with the introduction of the media arts. Through recording technologies, especially video tape, consumers now have nearly universal visual access to the styles and tastes of all historic periods, at least as presented on television and in motion pictures. Does one want to watch the gangster movies or musicals of 1930s? Or does one want to witness the French Revolution or Moses on the mountain? Does one want to replay it, time after time, or erase it to capture the images and sounds of another time and place?

Access to fashions and styles of historic periods has produced what Thomas Shales has called *the ReDecade* - the 1980s, a decade without a distinctive style of its own, a decade characterized by the pervasive stylistic presence of previous historic periods.

The impact of this phenomenon is, at least in the short term, confusion and disorientation. Time has become a major dimension of consumer behavior:

> It does seem obvious that here in the ReDecade ... the possibilities for becoming disoriented in time are greater than they have ever been before. And there's another thing that's greater than it has ever been before: accessibility of our former selves, of moving pictures of us and the world as we and it were five, ten, fifteen years ago. No citizens of any other century have ever been provided so many views of themselves as individuals or as a society. (Shales 1986: 72)

Drawing upon the input/output matrix, two components of the media arts can be identified: TV & audiovideo products and equipment (56), and TV & radio broadcasting (64). As noted above, TV and radio broadcasting data are suspect. Accordingly, only 'hardware' data from the input/output table will be analysed.

With respect to the 'hardware' industry, in 1982, total production was more than $50 billion. The TV & AV industry purchased nearly $24 billion from other industries and sold nearly $33 billion worth of products to them (Exhibit 3).

In 1982, the TV & audiovideo 'hardware' industry had export sales of nearly $4 billion but imported nearly $10 billion from abroad. This left a trade deficit of nearly $6 billion, or 10.9% of the total U.S. trade deficit (Exhibit 4).

With respect to SIC data, both 'hardware' and 'software' data are available. The media arts had total output of $147 billion in 1989, or 2.8% of GNP (Exhibit 5). The media arts contributed $57 billion in value added to the American economy, or 1.1% of GNP (Exhibit 6). Media arts employment amounted to nearly 1 million workers, or 0.8% of the total American workforce. (Exhibit 7)

Turning to miscellaneous business and other data, in 1991 total receipts and value of shipments of the advertising, motion picture theatre, photographic equipment and supplies and prerecorded music industries were projected at almost $57 billion of which advertising accounted for 37%; motion picture theatres, 9%; photographic equipment and supplies, 41%; and, prerecorded music, 12% (Appendix A, Table 4 a).

In 1987, there were nearly 4,000 commercial photography establishments in the U.S. with total receipts of nearly $1.2 billion (Appendix A, Table 4 b).

Performing Arts

The origins of the performing arts - dance, music, theatre and opera - are lost in the early mists of human evolution. The medium is the human body including voice, gesture and rhythm No recordings were available before the motion picture camera and the phonograph.

Music, of course, has had a written notation system for centuries; theatre has written scripts; opera has scripts and scores; dance, however, has a poorly developed notation system. Currently efforts are being made towards development of computer assisted recording of choreography.

But the 'live' performing arts suffer from an inherent cost disease known as 'the income gap'. This refers to the difference between what can be reasonably charged at the box office and the costs of a labour intense industry in which no increase in productivity is possible. It takes the same number of players, rehearsal and performance time to produce a Mozart Quartet today as it did in 1800 (Baumol, Bowen 1966).

Only Entertainment, Recreation and Amusements (76) data is available from the input/output table. Accordingly, no analysis is provided.

With respect to 1989 SIC data, museums are combined with amusement parks distorting available data. Nonetheless, analysis will be conducted. The performing arts industry had gross industrial production of nearly $23 billion, or 0.4% of GNP. When the arts factor was applied, net industrial output was $14 billion, or 0.3% of GNP (Exhibit 5). Gross value added of the performing arts was more than $13 billion. When the art factor was applied, net value added was $8 billion (Exhibit 6). Gross employment in the performing arts was 844,000 workers, or 0.7% of the American workforce. When the arts factor was applied, net employment was nearly 500,000 workers, or 0.4% of the total workforce (Exhibit 7).

Turning to miscellaneous data, the Research Division of the National Endowment for the Arts contracts the Department of Commerce to generate special tabulations of SIC data concerning the profit and nonprofit performing arts. In 1987, the profit and nonprofit performing arts had total revenues of $3.4 billion of which the for-profit sector accounted for 55% and the nonprofit sector for 45% (Appendix A, Table

5 a). Dance accounted for 5% of performing arts revenue: live theatre, 40%: and, music, 55%.

Visual Arts

The visual arts involve production of two and three dimensional works of art. In the European tradition, they are called the 'plastic' arts. The visual arts provide the only permanent link to prehistory before writing

The visual arts are different from the literary arts in other ways. Perhaps the most important is the mechanism by which meaning is conveyed.

> Every language of this world, even the most perfect, has an essential imperfection - that it is only successive: whereas the speech of the eye of images and signs is instantaneous. (Hillman 1980: 45).

Visual art generates a gestalt, i.e. one perceives not just discrete objects in a painting but a whole pattern. Meaning is instantaneously conveyed through a space, not through successive words strung together through time.

> Image and meaning are identical; and as the first takes shape, so the latter becomes clear. Actually, the pattern needs no interpretation: it portrays its own meaning (Hillman 1980: 57)

Like literary art, visual art is essentially a 'solitary art' executed by an individual artist wherever she or he may live.

Using the input/output matrix, there are eight visual arts-related industries:

No.	Name
16	Fabric Mills
17	Textiles
18	Clothing
19	Furnishings
22	Home Furniture
23	Office & Institutional Furniture
34	Leather Goods
64	Jewelry, Leisure & Recreation Products

Thus 8 of 12 art-related industries in the input/output matrix are visual arts. Gross production of the visual arts in 1982 was more than $156 billion, or amost 5% of GNP. The visual arts accounted for more that 50% of gross arts industry production. When the arts factor was applied, net production was $14 billion, or 0.4% of GNP. This dramatic reduction reflects the small part that art plays in the over all cost structure of these industries. This small direct contribution should not, however, be interpreted that its significance is small. A visit to a clothing store - women's or men's - will reveal that a designer (artist) label adds greatly to the price of clothing. As Alfred Lord Marshall said: '... it is the pattern which sells the things (Marshall 1920: 177-8).

Gross purchases from other American industries by the visual arts amounted to $83 billion, or 2.6% of GNP. When the arts factor was applied, net purchases were $8 billion, or 0.3% of GNP. Gross domestic visual arts sales were $135 billion, or 4.3% of GNP. When the arts factor was applied, net sales were $14 billion, or 0.5% of GNP (Exhibit 3).

The visual arts gross exports in 1982 were almost $6 billion, or 0.2% of GNP. When the arts factor was applied, net exports were almost $1 billion. Gross imports were almost $27 billion, or 0.9% of GNP. When the arts factor was applied, net imports were almost $4 billion. The gross visual arts trade deficit was $21 billion, or 0.7% of GNP, or 39% of the total U.S. trade deficit. When the arts factor was applied, the net visual arts trade deficit was $2.9 billion (Exhibit 4).

Using 1989 SIC data, gross visual arts industrial production was $118 billion, or 2.2% of GNP. When the arts factor was applied, net production was $7 billion (Exhibit 5). Gross value added by the visual arts was $61 billion, or 1.2% of GNP. When the arts factor was applied, net value added was less than $5 billion (Exhibit 6). Gross

visual arts employment was more than 1.8 million workers, or 1.6% of the workforce. When the arts factor was applied, net employment was less than 161,000 workers (Exhibit 7).

Turning to miscellaneous data sets, the Research Division of the National Endowment for the Arts contracts the Department of Commerce to generate special tabulations of SIC data concerning the visual arts. In 1987, fine artists' studios and retail art dealers had total sales of $1.6 billion (Appendix A, Table 6a). Commerical art and graphic design stores had receipts of $4.1 billion, of which commercial art contributed 20%; graphic design, 80% (Appendix A, Table 6 b).

It was forecast that in 1991 the jewelry, doll, game and toy industries had shipments of $11.3 billion, of which jewelry accounted for 60%; dolls and stuffed toys, 2.6%; and, games and toys, 37%. The overall trade deficit was $10.5 billion (Appendix A, Table 6 c).

The World Economic Forum publishes, every year, the *World Competitiveness Report*. The report is prepared from two sources: (a) the collective statistical resources of the IMF, World Bank, OECD and other international and national statistical agencies; and, (b) a Business Confidence Survey involving 12,000 CEO's around the world.

According to the *1991 World Competitiveness Report*, the United States ranked 1st with respect to population with at least one university degree and first in advertising expenditure per capita. However, American product design ranked 8th; worker motivation, 11th and quality of products, 12th (Appendix A, Table 6 d).

Heritage Arts

The heritage arts are subsumed under each form of art as a residual of contemporary creation preserved for and/or by subsequent generations. The heritage arts feed back to define standards and inspire contemporary creators. The heritage arts generate 'enrichment' through a marriage of scarcity and aesthetic value. This enrichment takes the form of both preservation of the past and security of financial investment

While concepts like "art as investment", "art as inflationary hedge" and "art as capital asset" offend those rooted in the traditional art world, art has come of age as an economic asset. It is bought and sold in national and international markets. The supply, at any given point in time, is declining through the ravishes of time and the vicissitudes of fate and nature. In a sense, rarities have displaced gold as the best store of value and hedge against inflation.

During the last generation, the public has in fact been stunned by enormous price increases for works of art. For example, in 1990, Van Gogh's "Portrait of Dr Gachet" became the most expense work of art ever sold at auction - $US 82.5 million (Reif 1990). Between 1969 and 1989, the average rate of return on art as investment was significantly higher than all other forms of capital investment in the USA (Appendix A, Table 7 b). Coins provided the best return: gold the worst - demonstrating the investment potential of a combination of aesthetic and scarcity value (*The Economist*, July 1, 1989). Roman coins will never be minted again, but the supply of gold will constantly grow.

Some idea of the value of accumulated American wealth held as heritage art was revealed in 1990 when the Financial Accounting Standards Board recommended new accounting rules requiring museums to state the value of their collections to earn the unqualified approval of auditors. The American Association of Museums estimated compliance with the proposal would cost $50 billion, assuming an average of $50 to

appraise each of the country's roughly one billion museum objects (Cowan 1990).

Unfortunately, neither the input/output matrix nor SIC data displayed in Exhibits 5, 6 and 7 provide usable information concerning the heritage arts. However, the Research Division of the National Endowment for the Arts contracts the Department of Commerce to generate special tabulations of SIC data concerning the profit and nonprofit heritage arts. In 1987, the profit and nonprofit heritage arts had total revenues of $2.3 billion of which the for-profit sector accounted for 3.4% and the nonprofit sector for 96.6% (Appendix A, Table 7a).

Significance

Art and the Competitiveness of Nations

Context

Having established the 'statistical' size of the American arts industry - industrial output, value added, balance of trade and employment, the question remains: what is the 'true' significance of the arts industry. Significance, of course, can, and should, be assessed in a manifold manner, e.g. historic, political, psychologic, spiritual, sociologic, et al. In keeping with the economic thrust of this study, significance will be assessed relative to the major external force acting upon the arts industry, and virtually all other sectors of American society today, i.e. national competitiveness.

To do so, Art should be contextualized within framework of the knowledge economy and this will require definitional adjustment. a *fissioning* of the *art/science* perspective presented in the introductory sections of this study. Accordingly, *science*, in this section of the study, will be restricted to the natural sciences and engineering. Furthermore, between the natural sciences and the arts resides the humanties and the social sciences. This section was made possible partially through a grant from the International Cultural Relations Bureau of External Affairs & International Trade Canada as part of a larger research project concerning the state of world higher education.

Old Word, New Meaning

In the last decade, an old word has increasingly broken through into public consciousness: that word is *competitiveness*. Competitiveness has, of course, always been with us. But, contemporary usage extends traditional mass market price competition to embrace 'working smarter' in response to consumer demand for both higher quality and more customized goods and services, globalization and technological advance. Competitiveness applies:

- at the international, national, regional and local level;
- in the office and on the shop floor;
- in for-profit, nonprofit and public enterprises;
- in all parts of the learning industry, i.e. education and training;
- to employed, underemployed, unemployed and unemployable members of society; and in general,
- to all citizens, institutions, organizations and agencies of a post-modern nation state.

The spread and penetration of competitiveness into popular usage, together with its inherently coercive nature, suggests a new 'criterion' has emerged to assess the performance of the post-modern nation state.

Promise and Threat

Competitiveness promises profitable and progressive industries, more satisfying jobs, higher salaries and greater tax revenues (collected at lower rates) for social investments such as deficit retirement, education, health, infrastructure and welfare. It also promises to make one's country, community or company 'top dog' in a confusing post-Cold War world.

Competitiveness is very often portrayed as a sports-style 'zero-sum' game. Phrases like 'skating where the puck is going, not where it is' (Wilson 1992) captures its anticipative connotation, revealing perhaps its sports origins. In this game, some win and some lose in an apocalyptic 'us/them' confrontation deciding the destiny of our children, community and country.

Entry of competitiveness into the marketplace of ideas has also effectively quenched the last flickering embers of what sounds increasingly like an ancient incantation of the 1960s: *the revolution of rising expectations*. A blanket fear of job loss has smothered citizen, consumer and worker

confidence in North America. Fear of downsizing, 'foreign devils', plant obsolescence, privatization, redund-ancy and technological displacement has chastised a work force that lives in fear that competitiveness means:

- 'living to work' rather than 'working to live';
- vocational or instrumental training rather than educational rounding of the entire human soul;
- fear of job loss rather than pride in one's work; and,
- fear of Third World countries (and their immigrants) as threats to economic security rather than essential partners in developing a more cosmopolitan, cultivated, equitable, peaceful, prosperous, stable and tolerant tomorrow.

Implications

Perhaps the most articulate expression of the concept is found in the *World Competitiveness Report* published annually by the World Economic Forum and Institute for Management Development located in Geneva, Switzerland. The report, over its 12 year history, documents the evolution and extension of the competitiveness concept. In the 1992 report, an important extension of the concept is highlighted.

> The past 12 World Competitiveness Reports have consistently shown that excellence in the implementation process is a cornerstone to competitiveness ... by mastering, quickly and accurately, the transformation of ideas and technologies into products ...
>
> [But] the ... Report also stresses the role of the so-called "softer side" of competitiveness ... such as motivation, education, attitudes and values... which reflects the shift towards a knowledge-based economy. In the industrialized world today, only 15% of the active population physically touches a product. The other 85% are adding value through the creation, the management and the transformation of information. As a result the human dimension of competit-iveness has become a key success factor ... This human dimension ... is characterized by the longer time lag needed to reverse trends. For example the first results of reforming the education system ... will probably only be seen in a generation... (World Economic Forum 1992: 4-6)

To gain fuller appreciation of competitiveness, especially of the 'softer side' competitiveness, the concept will be placed within the context of scientific, political, intellectual and economic knowledge - the building blocs of a 'knowledge-based' economy.

Scientific Context

Competitiveness is thus linked with creation, transmission and timely application of new knowledge. Together, creation, transmission as well as application of knowledge result in technological change. Such advance fuels the shadowy engines of post-modern economic growth - the 'knowledge industries' and the "information economy" (Porat 1977).

> A strong argument can be made that information capital is as important to the future growth of the American economy as money. Despite this perception, this intellectual capital does not show up in the numbers economists customarily look at or quote about capital formation ... In saying that, I am not arguing that money capital will not continue to be very important; it will.
>
> But I am suggesting that the amazing accumulation of knowledge capital in the last twenty years is very substantial and growing every day but it is uncounted. We have little or no control over the natural resources within our borders, but we do have control over our educational and cultural environment ... If we want better economic forecasting and better policies, clearly some way needs to be found to crank the growth of

knowledge into our equations. (Wriston 1985)

There is, to be sure, good reason to believe this argument. Since the turn of this century, more than two-thirds of growth in U.S. national income per worker is attributable to technological advance (Shapiro 1970: 493).

But while technological advance is the single most important source of economic growth, our understanding of its nature is strictly limited (Bell 1981: 80). We do not know why some things are invented and others are not; why some things invented are innovated and brought to market, while others are not. In fact, technological advance has been called *the measure of our ignorance* about economic growth.

This lacuna partially reflects that knowledge traditionally considered relevant for technological advance has been restricted to the physical sciences and engineering as well as their handmaidens - literacy and numeracy. Only passing reference is usually made to 'softer' forms of 'knowing' (European Commission 1991).

Scientific Knowledge

This is a very old prejudice. Nineteenth and twentieth century Western cultures were based on the assumptions that:

i - science is the only method for attaining true knowledge;

ii - where, in any human endeavour, knowledge is to be sought, science must be used;

iii - because science is the only source of true knowledge, it can provide an all-encompassing view of reality; in other words, it can be raised from a scientific *method* to a *scientific view of the world* (Sloane 1991: 24).

Modern science, as a method for understanding nature, is based on the decision to exclude qualities and forces that cannot be directly perceived through the senses or interpreted in terms of physical cause and effect. And there is no doubt that:

> ... science in the modern era ha(s), as nothing else, affected the whole of human experience. The worlds of culture, of social institutions, of man's relations, and his own self-understanding ... continue to be, decisively reshaped by scientific discovery and its associated technological applications (Sloane 1991: 25).

Cultural Knowledge

But 'ways of knowing' are like the facets of a gemstone, some twinkle in a certain light while others remain dim or dark to view. In the first half of this century, John Dewey, among others, attempted to contextualize science by aligning it with other facets of knowledge and experience, i.e. with human culture as a whole. He and others feared that the very power and success of the scientific method held not only promise but also threat. Dewey feared that Western civilization had made some kind of Faustian bargain with science. Dewey's attempt:

> ... showed that modern science has limits set to it, limits within which it has great power and potential usefulness but when modern science is extended beyond these limits, it is misleading and destructive. The proper domain of science, in Dewey's view, is precisely the quantitative and mechanical dimensions of reality.
>
> ... Dewey's solution underscores the absolute necessity that instrumental reason as embodied in science must have a context not itself. Without such a context, science runs amok. Equally clear is that this context for quantitative, mechanical instrumental knowing must be qualitative through and through (Sloane 1991:29-30).

Implications

If a knowledge economy is emerging, then the 'soft side' of competitiveness needs to be better researched. It may turn out that the return from research in education, motivation and the transformation of value systems may be significantly greater than

additional resources poured into increasing expensive and capital intensive natural science research.

Political Context

Contextualization of science is no longer simply an 'academic' question. It has attained political, intellectual and economic importance. Before investigating its intellectual and economic aspects, three examples of 'real' world contextualization are presented. These examples make evident that contextualization is, among other incarnations, taking the form of mass social movements - movements of an intensity not seen since the antinuclear and antiwar movements of the 1950s and '60s.

Religious Knowledge

First, scientific knowledge itself is being restricted. For example, in the United States, the federal government refuses to fund non-reproduction-related research using human fetal tissue and the so-called 'abortion' pill (*The Economist*, August 1, 1992: 22). Non-funding is based on a 'right to life' ethic and religious 'knowledge' of when life begins. This motivates a powerful social and political movement.

In fact, three hundred years into the 'age of reason' and opinion polls indicate nearly half of the population believes in UFOs, astrology or the New Age movement. A significant segment of society is fundamentalist Christian and accepts as divine truth a book written in ancient Aramaic and Greek, translated into Latin and from Latin into English, French and other modern languages. While the original may have been divinely inspired, one may fairly question the translators from one language to another, and the *transliterators* from one alphabet to another.

Many are creationists convinced the world was created *ex nihilo* 7,000 years ago and actively seek equal time in the classroom with what they consider the secular myth of evolution. The drug epidemic (including alcoholism) infects a population which cannot, or will not, cope with the stresses and strains of modern life except through hedonism and temporarily induced oblivion. This epidemic reflects a failure to institutionalize *ecstasy* as has been achieved in other civilizations.

The scientific method, applied to the outer, material world, has taken humanity to the moon and beyond. It has given us a collective vision of the *unus mundus* - one world, one people, one biosphere. But the inner world of feeling, intuition and sensation has not been, and perhaps cannot be, tamed by reason alone. In fact, after 300 years of enlightenment and the scientific method, we live in a world riddled by superstition, irrational beliefs and ideological fanaticism.

Women's Knowledge

Second, women's 'knowledge' is being *institutionalized* throughout society: in the courts, universities and Fortune 500 companies - women can now walk proud in the corridors of power. Feminist argue that women carry a form of knowledge and experience distinct from men. They contend that without this feminine knowledge, societal guidance mechanisms will go off course causing unnecessary human suffering and wasted effort.

But integration of feminine knowledge is not a universal phenomenon. In non-Western societies, including the Islamic states, sexual segregation is still practiced.

Attempts to articulate feminine knowledge tend to be generalizations that will probably be adjusted through time and with research. But one difference appears to be that women seek power from *an agenda*: something needs to be done, get the power, do it! Men, on the other hand, seek power *for position*. At the extreme, the feminist argument is:

> Until now, *womyn* have been too busy fighting for equality to speak of superiority. Further-more, it would have been very bad public relations to do so. Nonetheless, it is said that the

> world would be a better place if it were run by womyn (the politically correct spelling, as is *Herstory*).

Nature's Knowledge

Third, ecology is a 'holistic' vision firing the public imagination and leading to mass movements and institutional change including the recent *Rio Earth Summit*. Whether rain forests, whales, ozone depletion, global warming or recycling, the 'Green' movement rejects the reductive, mechanistic approach of the traditional physical sciences and offers instead a *relational* perspective of environmental systems, e.g. the spotted owl is not an isolated element in a mechanism, but rather, a link in an eternal chain of life. If the link is broken, does the chain fall apart?

Within traditional reductive science, Nature is fair game for being taken apart, rearranged, and used up, without regard for its own inwardness, which is denied to it (Sloane 1991: 31). An ecologic perspective is, however, *holistic*: everything connects to everything else, perhaps even animal liberation.

There is also a connection drawn by some eco-feminists between the subjection of women (Mill 1869) and exploitation of nature by 'Lord Man':

> ... it is clear that there is a direct link between the domination of women, the persecution of witches, and the ecological destruction that we are now facing. Both are expressions of male violence and contempt towards the Goddess, woman and nature (Metzner 1990: 25-6).

Implications

The reality is that what is accepted by a culture as 'legitimate' knowledge serves to distinguish it from any other (Weiler 1991). It also defines the scope for achieving short-term competitiveness.

Before turning to intellectual and economic aspects, some questions need to be raised even if, at the moment, they cannot be answered. These include:

> Will restricting scientific research according to religious knowledge create a competitive advantage?
>
> Will integrating women's and ethnic knowledge into main-stream power structures affect competitiveness?
>
> Will accounting for ecological knowledge make industry more or less competitive?

These are questions that probably require distinctly different answers in the short and the long term, and in different countries and cultures.

Intellectual Context

There is a deepening crisis in the global learning industry including academic colleges and universities; arts academies and professional schools; correspondence and distant learning institutions; polytechnics and technical colleges, private teachers and scholars; public and private schools; and, of course, the teacher-producers and student-consumers of learning products and services.

Institutional Knowledge

The learning industry, like other sectors of society, is confronting a rapidly changing political context in which ecological, ethnic, religious and women's knowledge is being 'legitimized'. But, in addition, the learning industry faces five internal challenges.

First, the *dis-ease* within the industry partially reflects a growing and fundamental questioning of the paramount position granted to the natural sciences in the hierarchy of knowledge, and their previously unquestioned claim to having their standards of validation apply - *no matter the object or the subject of investigation* (Weiler 1991: 1-2).

More generally, there is unrest about the generally hierarchical nature of politics within the learning industry, e.g. full professors versus associates; the 'right' schools verus the wrong ones; the abstract versus the applied arts and sciences; etc.

Second, questioning reflects that 'reality' is increasingly recognized as *socially*

constructed. In fact, the central concepts of social life - choice and volition - appear incompatible with central concepts of scientific prediction - laws of motion and probability. Prediction, informed by scientific evidence, is possible, but not *scientific* prediction.

Third, in part, doubts emerge from failure of Western assistance to 'developing' nations, especially in tribal Africa. The experience of postwar history demonstrates that scientific and technical assistance, from either capitalist or Marxist countries, was insufficient, on its own, to engender the developmental process. The cultural location and disposition of 'observer' and 'participant' are essential and, unmistakably, results reflect this reality, e.g. the successful development experience of many 'Confucian' countries of the Asia Pacific Rim (Weiler 1991: 3).

Fourth, there is growing tension between vocational and educational objectives within the learning industry. With respect to the traditional university, this reflects a shifting of the balance between the university's three principal roles:

a) to conduct research and thereby create new knowledge;

(b) to teach and thereby transmit knowledge; and,

(c) to serve the community and thereby apply knowledge.

In part, the growing tension between vocational and educational objectives also reflects that:

> ... the very nature of modern economic activity has become so massively dependent on up-to-date knowledge of constantly increasing scope and complexity that the linkage between knowledge ... productivity and profitability has become inescapable ... This is true for the 'hard' sciences and their utility for industrial and other forms of engineering, but also for the knowledge of social and psychological processes and its significance for dealing with labor problems, enhancing productivity, and other forms of 'social engineering' (Weiler 1991: 7).

Historical Aside

To appreciate current tensions between vocational and educational objectives, it is appropriate to briefly review the evolution of learning institutions in the English-speaking world.

The self-governing university, i.e. independent of the church and state, emerged in the Occident during the twelfth and thirteenth centuries. At the beginning, this social institution was essentially an incorporated association of teachers, as in Paris, or of students, as in Bologna (Schumpeter 1954: 77-78). Oxford University was founded in A.D. 1167, modeled after the University of Paris. To a degree, the universities broke the monopoly of knowledge held by the Church. Accordingly, secular monarchs cultivated and supported these new knowledge institutions to balance the influence of the clergy.

Before long, the associations of scholars and students grouped themselves into faculties, according to the different branches of knowledge. From that time to the present, the university has enjoyed unparalleled social and political autonomy. This autonomy is reflected in tenure, i.e. lifelong appointment based upon peer review or evaluation of the scholar. Tenure permits scholars to pursue intellectual interests free from the threat of dismissal. Research initiated through the individual scholar is called *curiosity-based* or *pure research* involving the search for knowledge for knowledge's sake.

The branches of knowledge, or faculties of the university, were essentially based on the classic liberal arts curriculum. Medicine and law were two additions admitted to the medieval university. However, their 'vocational' nature made them somewhat distant from the main academic body of the university.

Similarly, with the exception of music and literature (rhetoric and grammar), art was not part of the ancient or medieval liberal arts curriculum (Cantor 1969: 66-67). The arts were considered 'crafts', i.e. vocational. It was not until the Renaissance that the fine art academy was established as a formal center for visual art education - completely independent of the university (vom Busch 1985: 3). In theater and dance, there was no formal training in English-speaking universities until the late 19th and early 20th centuries (Robinson 1982: 178-179, 191-192). The traditional independent status of the music conservatory is evidence of the separate institutional pattern of learning pursued in art and science.

The beginning of institutionalized science in England started with the Royal Society, established in 1660, which served as a focus for extending the scientific method. Technology, at that time remained, however, craft-based, i.e. controlled and protected by the guilds. Scientific information was largely symbolic of national wealth, i.e. a nation rich enough in gold could demonstrate its wealth through pursuit of scientific knowledge. Similarly, art was considered a symbol, not a source of wealth.

The organization of formal vocational training in England had to await destruction of the craft guild system. Until 1814, the *Statute of Artificers* regulated vocational training and employment in the craft guild tradition. In that year, responding to deregulation or *laissez-faire* economic and Benthamite social policies, Parliament abolished the Statute. In short order, the guild system collapsed and the labour market became flooded with unskilled workers. By 1835 the quality of British production, particularly textiles, had declined to the point that the British Board of Trade appointed a Select Committee to investigate the problem and recommend remedies. It called for the direct marriage of art and manufacturing in order to maintain competitiveness with European rivals. The result was creation of the first school of design in South Kensington in 1836 (Savage 1985).

Then in the mid- to late nineteenth century, vocational training in the English-speaking world became formalized in institutions of higher education called *polytechnics*. These were created by the founders of the Industrial Revolution in England.

> The men responsible for technological innovations . . . during the beginning of the Industrial Revolution were non-conformists who had been excluded from the universities and learned their science indirectly while pursuing their trade. In other words, the coupling between science and technology was very loose and did not rely on the established system of higher education. (Senate Special Committee 1970: 21)

The success of vocational institutions like the Manchester Polytechnic resulted, in many cases, in their absorption or transformation into traditional universities, e.g. the Manchester Polytechnic became the University of Manchester which combined the pure and applied arts and sciences (technology) into the pattern of scientific learning general in the English-speaking world today.

And, of course, in 1870 compulsory primary education was introduced in England. This began the process of diffusing cultural, scientific and experiential knowledge to a wider proportion of the population. It is important to note, however, that the major innovations of the period, e.g. the telephone, telegraph and electric light did not result from university-based research but from the insight of independent inventors, who, like Bell and Edison, created their own research institutes outside the university.

In fact, it was only in the post-World War Two era that the university and university-based research became the dominant source of new technology including chemical, electrical, and nuclear technologies. The war

years confirmed that university-based scientific knowledge could play a major role in development of technology. During this period, the concept of technological change evolved into *embodied technological change*, meaning that specific items of scientific knowledge were embodied in a specific product, for example, the transistor radio. Conventional wisdom now holds that the era of the independent, nonconformist inventor is drawing to an end. However, this convention could be quickly swept away with the appearance of another Bell, Edison or Marconi, i.e. an inventive genius from outside the the ivory tower.

Fifth, unease within the global learning industry reflects, in part, realization that learning is the ultimate resource. This realization gained initial global prominence in 1979 with publication of the second report of the Club of Rome: *No Limits to Learning*. While this second report did not receive the feverish public reception of its predecessors: *Limits to Growth*, it nonetheless highlighted the critical importance of learning for global problem-solving, development and integrity:

> ... we were all proud of a civilization highlighted by unprecedented scientific achieve-ment, wonderful technology and a flood of mass-production which brought in its stride higher standards of life, the conquest of disease, undreamed of travel opportunities and instant audiovisual communications.
>
> But it eventually began to dawn on us that by the indiscriminate adoption of this pattern we were all too often paying exorbitant social or ecological costs for improvements obtained, and were even induced to neglect the virtues and values which are the foundations of a healthy society and at the same time the very salt of the quality of life. Then came the creeping doubt that for all its greatness humanity lacked wisdom (Botkin, Elmandjra, Malitza, 1979).

The authors went on:

> The elements through which all learning is mediated include language, tools, values, human relations and images ... The present theory and practice of ... learning tends to elevate language at the expense of all other elements. Tools still receive some attention, but are often considered a second-class of instruments. The others are usually limited to those intrinsic to the status quo, human relations are dismissed as irrelevant, and images are seldom made explicit except in the arts.
>
> While images may be thought to pertain to individuals and to the inner, private life, they also exist at the societal level ... The fact that collective images exist - and that perceptions can be shared - links societal to individual learning (Botkin, Elmandjra, Malitza, 1979)

But the hierarchy of knowledge, within the traditional learning industry, remains unchanged and has failed to accommodate the elements of learning other than literacy and numeracy.

Traditional Knowledge

From as early as Galileo, a traditional distinction has made between the primary, secondary and tertiary elements of knowledge or experience. *Primary knowledge* concerns *facts or quantities* such as size and extension in space, number, weight or mass, motion and time. These elements of knowledge are regarded as belonging to the 'real' world. They are accessible to observation, experiment, and measure and thus, from the very beginning, modern science was based on a method which by definition deals only with primary knowledge, that is, quantity.

Secondary knowledge or *qualities* pertains to sensations such as colour, taste, smell and form as well as larger concatenations of these qualities. Qualities are held to exist only in the mind of the observer, i.e. they are produced by the perceiving mind out of physical experience; they do not exist in the objective world. Accordingly, even if qualities are real, they are not accessible to the scientific method (Sloane 1991).

Tertiary knowledge or *values* are said not to be perceivable from the outside world but are rather innate ideas, divinely implanted or invented by the subjective observer (Griffin 1991). Being purely subjective, values are not accessible to study using the scientific method.

Thus the traditional model of knowledge admits to three distinct types of knowledge. But of the three, only one - quantity - is accessible to the scientific method. The traditional knowledge hierarchy placing scientific or instrumental knowledge on top has significant consequences:

> ... It encourages the seeing of all human problems as purely scientific and technological problems ... But ... we might say, the definitively human problems ... have no solution, let alone a technical solution. These are issues that lie at the heart of distinctively human experience - issues involving, for instance self-identity, commitment, loyalty, courage, sacrifice, and so on, and their sources. They have no solution in any instrumentalist sense. The central human issues are probably better thought of as not problems at all but rather more as life-tasks and challenges. They call not so much for explanation and solutions as they do... for understanding (Sloane 1991: 32).

Implications

Within the learning industry, the irresistible pressure for vocational training in the sciences faces an immovable desire on the part of students for contextual cultural knowledge, i.e education in the sense of rounding. Further, if the scientific method generates only one type of knowledge, i.e. of quantities, what methods should be used for qualities and values?

Post-Modern Context

If the traditional scientific model of knowledge is inadequate to the post-modern experience then how can it be extended, modified or replaced to fill the contemporary 'knowledge' deficit?

The Spiral Ladder

One way to refresh the traditional model of knowledge is to update it, for example, by using the famous image of the DNA double helix - the spiral ladder of life - the most complex process in the physical universe.

The conceptual dynamism and vigor of the double helix model can be used to generate a working model of the structure and fabric of knowledge - the most complex process in the human world. The model could be used to test implications for soft or cultural competitiveness. This model could be called: *the spiral ladder of cultural competitiveness* (Exhibit 8).

The model deals with the sources, uses and purposes of knowledge. It assumes that there are *three uses of knowledge*:

- knowledge-for-knowledge's sake:
- knowledge for decision and profit: and,
- knowledge for democracy, i.e. an informed electorate is a prerequisite for effective democracy.

The model also assumes *three domains of knowledge* corresponding to traditional primary, secondary and tertiary forms, i.e. facts, qualities and values. These are:

- the natural science & engineering (*NSE*);
- the humanities and social sciences (*HSS*); and,
- the arts.

Natural Sciences & Engineering

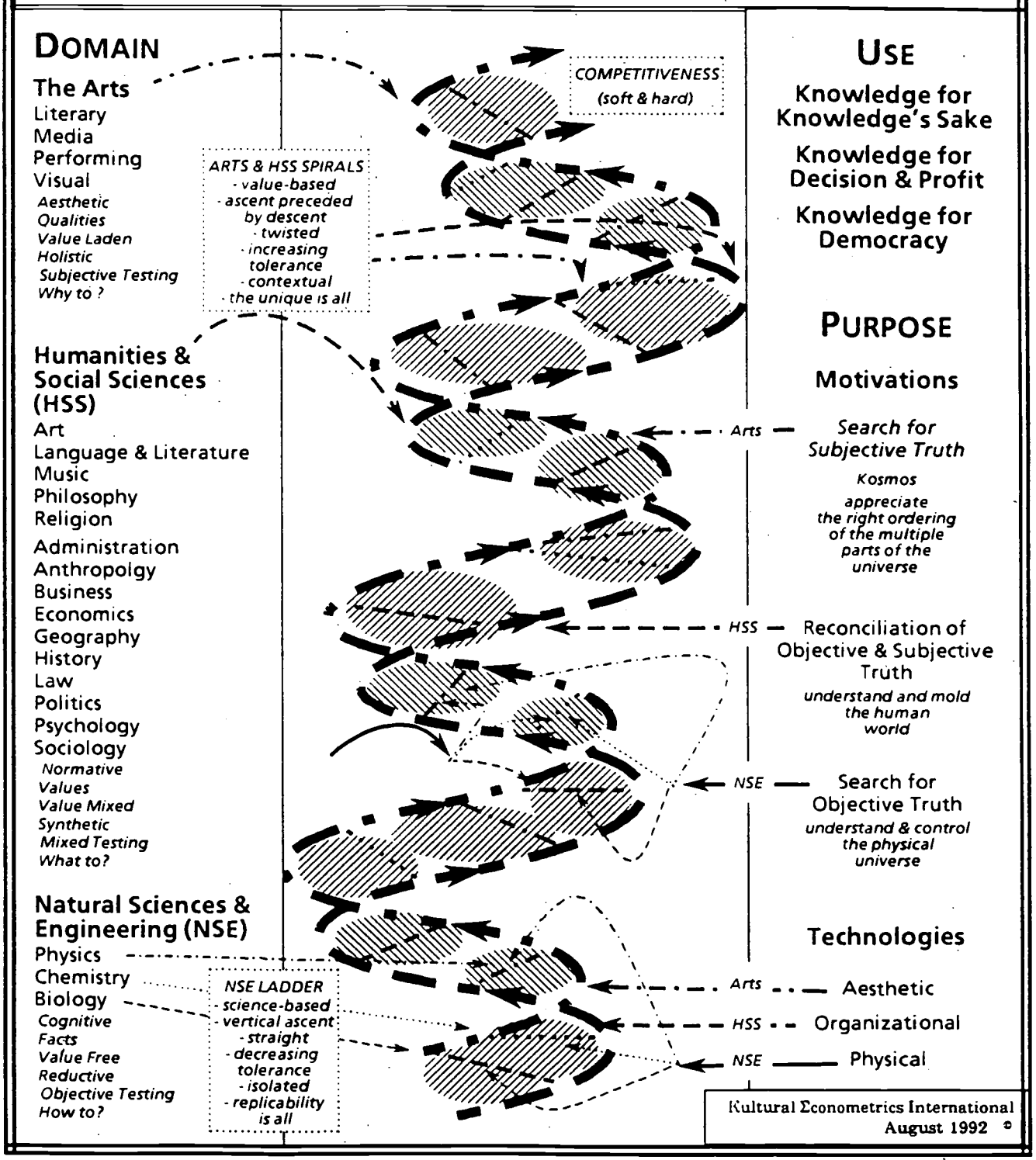
NSE consist of three primary disciplines: biology, chemistry and physics. Virtually all other disciplines are permutations and combinations of knowledge derived from these three. Some argue even biology and chemistry can be reduced to physics.

Generation of *NSE* knowledge is achieved by applying the scientific method characterized by replicability and objective testing. *NSE* corresponds to traditional primary knowledge of quantities or facts. It lves the search for objective knowledge to understand and control the physical

Exhibit 8

SPIRAL LADDER OF CULTURAL COMPETITIVENESS

Domains, Uses and Purposes of Knowledge



niverse. It is value-free, i.e. it is applicable anywhere and anytime excepting conditions just before and after the 'Big Bang'. The earch is reductive in nature, i.e. questions are broken down into manageable pieces. It provides the 'how to' by which humanity may change and affect the physical universe.

Progressiveness of *NSE* knowledge is vertical - rising up the rungs of a ladder (Washburn 1990). Each step is closer to the truth, i.e. new knowledge displaces the old. It is also characterized by *intolerance of difference*, i.e. progress is a process of reducing error, replicability is all.

In the model, exceptional treatment must be accorded to the medical sciences which, to varying degrees, create and apply NSE, HSS and. to a lesser extent, artistic knowledge. Many medical sciences function at the borderline between mind and matter; between *psyche* and *physis* (Penfield 1975).

Humanities & Social Sciences

HSS consist of two related branches: the humanities and the social sciences. Both are concerned with understanding the human world. For the humanities, this is sufficient. For the social sciences, however, understanding extends to control of the human world, i.e. social engineering. *HSS* knowledge corresponds, roughly, with secondary knowledge of qualities in the traditional model. *HSS* also involves assessment of the interaction of the physical and human universes, i.e. *HSS* searches for reconciliation between objective and subjective truth.

In *NSE*, three basic disciplines form the bedrock upon which knowledge is built up. In the past, philosophy and sociology pretended to leading roles in the humanities and social sciences, respectively. Today, however, there is no 'queen' or principal discipline in *HSS*.

Within *HSS* there are sets of disciplines. A discipline can be considered a generalized theory akin to a language. A theory, i.e. a supposition or system of ideas explaining a phenomenon, is generally couched in certain words and concepts which, when numerous enough, elevate it to the rank of discipline. Hence economics is a language of thought that possesses, like all languages, a vocabulary and rules of syntax. Rules of syntax differ, to some degree, between the disciplines because most pride themselves on methodologies made-to-measure for problems encountered (Valaskakis 1975: 452-3).

The humanities are a complex of disciplines concerned with modes of expression and interpretation of human thought, emotion and experience. The social sciences are a another complex of disciplines concerned with the behaviour and interactions of people, nature and social institutions (OECD 1979: 12). Together the social sciences and humanities share a common interest in the human dimension of reality. Both are concerned with actual and potential goals and values for the individual and human communities.

Generation of *HSS* knowledge is achieved through 'research'. The results of *HSS* research take the form of ideas and insights disseminated through scholarly, and then popular publications. Humanities research involves critical study, interpretation or inquiry using generally accepted practices of modes of expression and interpretation of human thought, emotion and experience.

Social science research involves investigation using established rules for performing observation and testing the soundness of conclusions regarding behaviour and interactions of people and social institutions. Unlike the humanities, quantitative methods, i.e. statistics, play a significant role in the social sciences.

Nonetheless, the social sciences must apply a significantly modified scientific method because even basic tenets of the social sciences cannot be quantitatively tested. Quite simply, the technology of social observation and measurement is inadequate.

An example is the *theory of revealed preference* in economics. Essentially, the theory says behaviour reveals preferences. However, to test this theory with respect to consumer behaviour would require all purchases made through time would be monitored and all changes in family income and general situation were held constant. While the theory appears reasonable, and accepted within economics, it cannot be tested in the real world (Sen 1973: 241-259). Accordingly, testing in

HSS tends to be a mixture of scientific method. normative values and 'believability'.

Furthermore, unlike *NSE*. *HSS* research results are relative to time and space. i.e. HSS knowledge is not value-free (OECD 1979: 18). Value relativity is also reflected in the conservation of existing intellectual capital (Keynes 1936: 383-4). Controversy also exists regarding the relevance of research about one culture conducted by social scientists or humanists of another (Myrdal 1966: Streeten 1974: 1290-1300).

Progressiveness in *HSS* is not vertical. New knowledge does not necessary displace old. The insights of Plato and Shakespeare concerning the human condition are as relevant today as centuries ago. In fact. progress in *HSS* is more like a spiral on which ascent is preceded by descent back into the past (Washburn 1990).

Progress in *HSS* is also characterized by an *increasing tolerance of difference*. All things being equal, the more one studies the ways of different cultures, genders, races and times, the more tolerant of difference becomes the observer.

The relativity and permeability of knowledge is especially evident in the social sciences which draw upon the *concepts* of the natural science and the *precepts*, i.e. normative values, of the arts and humanities. This dependency upon precepts is most evident in ideology, and in the difficulty of reaching consensus concerning the validity of social scientific knowledge and utilization of its insights for social improvement (Mayer 1978).

The Arts

If natural science is the study of the outer, material world; then art is the study of the inner, subjective world. If the sciences involve the search for objective truth, then the arts involve the search for subjective truth. If science has a 'pure' research or 'knowledge-for-knowledge's-sake' sector that is 'value free', then art has a corresponding 'art-for-art's-sake' sector which is 'value laden'. If science improves our physical comfort and wellbeing; then art improves our inner wellbeing including interpersonal and intercultural relationships

If science, excluding the so-called human sciences, breaks down into three basic disciplines - biology, chemistry and physics; then art breaks down into four basic media of expression - the literary, media, performing and visual arts. Each uses a distinct medium of expression: the written word, the mechanically recorded sound and image, the live stage and the visual image. Each medium is, in turn, composed of many subdisciplines and schools based upon differences in style, technique and interpretation. In fact, each artistic medium breaks down into as many varied and subtle branches of expression as any of the physical sciences.

Artistic knowledge, however, is unlike scientific knowledge in a number of ways. First, this difference is exhibited by the differing pattern of education in art and science.. There is, in fact, a well recognized gap between graduation from university (high in theory, low in practice) and attainment of professionalism in the arts: art is learned by doing; it is *experiential*. Thus old craft methods of apprenticeship and master classes survived the Industrial Revolution and remain the most effective method of professional training in the arts. Science, by contrast, is learned by studying and applying a body of systematized knowledge and method.

Second, scientific knowledge tends to depreciate through time, e.g. Greek deductive science has been displaced by modern experimental science. In art, however. knowledge tends to appreciate through time. King Tut, Shakespeare and Bach still speak, still sell. In the media arts, Hollywood film libraries are now multi-million dollar assets. Maintaining classical repertoire, of all forms, provides continuing inspiration to contemporary creators; it establishes standards of excellence against which new work is judged.

This 'religio' or linking back is embodied in the 'heritage arts' which conserve and preserve past and current artistic creation for subsequent generations. However, heritage art also imposes 'the deadening hand of the past'. Contemporary creators must compete not just with domestic and foreign contemporaries, but also with creative spirits of the past. Their works have been tried and tested through time; they enjoy advantages over contemporary creators who must push against the flood tide of history.

We have also forgotten that *kosmos*. in Greek, means *the right placing of the multiple things of the world*: not an abstract, impersonal universe out there where no one has gone before. This *right placing of things* is *beauty* - the comely coming together of parts. And the means by which a right order is brought into the universe is art. In fact, the equivalent word today for this Greel sense of *ksomos* is cosmetic, a gift of the Goddess Aphrodite.

The success of the Greeks in attaining aesthetic order is a great living legacy of the ancient world. and to the Greeks, beauty had a moral imperative - *kalon kagathon* - the beautiful and the good. From this, the poet went on:

> Beauty is truth, truth beauty,- that is all
> Ye know on earth. and all ye need to know.
> John Keats. *Ode to a Grecian Urn*, Stanza 2.

This sense of wholeness, of *rightness* is aesthetic knowledge:

> That is, the activity of perception or sensation in Greek is *aisthesis* which means at root "taking in" and "breathing in" - a "gasp", that primary aesthetic response.
>
> What is it to 'take in' or breathe in the world? ... it means aspiring and inspiring the literal presentation of things by gasping. The transfiguration of matter occurs through wonder. This aesthetic reaction which precedes intellectual wonder inspires the given beyond itself, letting each thing reveal its particular aspiration within a cosmic arrangement (Hillman 1981: 31-2).

Finally, it is only in art that imagination comes fully into its own. It is in art that imagination is seen to be that grasp of wholeness in all its qualitative relationships, which is the essence of a sense of beauty. It is a way of seeing and feeling things as they compose an integral whole. The whole person also is involved, for imagination is what happens when varied materials of sense quality, emotion, and meaning come together in a union that makes a new birth in the world (Sloane 1991: 38). Or, as Griffin said: "Creativity is that process or activity by which 'the many become one, and are increased by one'" (Griffin 1991: 10).

Cohesion

Metaphorically, the spiral ladder is held together by interactions of the three knowledge sources. Each plays a role in defining a culture. *NSE* forms the hard rungs of the ladder permitting *reality testing* of values and beliefs, e.g. food taboos tend to fade fast in the face of famine. *NSE* provides a culture with the 'how to' change the material world.

HSS, on the other hand, generates knowledge of 'what' is worth doing according to it's value set. In this way, *HSS* contextualize *NSE* knowledge. Thus while natural science may be able to genetically engineer a 'super-race', this does not mean that society will allow it.

Similarly, art contextualizes *NSE* and *HSS* providing them with emotional valuation, in the form of aesthetic knowledge, of a *gestalt of wholeness* or, *of rightness*. For example, science says trees regrow when cut down, but an aesthetic response to 'clear cutting' 'old growth' forest may be so overwhelming that scientific *reason* is swept aside to avoid 'ugliness'.

Implications

While in the West, democratic and egalitarian values may constrain some natural science knowledge, in parts of the Islamic world, faith still segregates the sexes and limits artistic expression, e.g the general prohibition against images of the human body - the temple of God, and the ongoing Iranian contract on the life of Simon Rushdie. But Islam and the West are but two of many competing cultures. e.g. China, Columbia, India, Indonesia, etc.

Each culture has its own nonscientific 'truths' that limit short-term and long-term competitiveness. Does short-term resistance lead to long run competitive failure? Or, can short term resistance promote long term competitiveness? For example, are short term costs of integrating new knowledge, e.g. women's or ecological knowledge, offset by long term benefits flowing from social and political stability?

Economic Context

The three forms of knowledge generate different and distinct types of technology. It is generally

forgotten that technology is derived from the Greek *tekhne* meaning art and *logos* meaning reason, i.e. reasoned art. In simple terms, the physical sciences generate the technology of the 'hand'; the humanities and the social sciences generate the technology of the 'head'; and the arts generate the technology of the 'heart'.

Definitions

To understand the new knowledge economy and the contribution of the differing sources of contemporary knowledge, it is appropriate to begin with basic definitions:

(a) *information* is discreet bits of knowledge arising either from application of the scientific method *and/or* through direct human experience, that is to say, experiential knowledge;

(b) *knowledge* is systematized and retrievable information either in the form of expert opinion, or from a storage medium such as books and computers;

(c) *understanding* involves the emotional valuation of both individual bits of information and knowledge, e.g. right or wrong, good or bad, useful or useless, etc;

(d) *wisdom* involves human experience and knowledge combined with the power to apply them critically or practically, i.e. to getting results;

(e) the *knowledge economy* implies the *monetarization of information*, i.e information that was once freely available, e.g. university research, is transformed into a potential financial asset; its availability becoming rationed by money, not interest in knowledge for knowledge's sake; and

(f) the *currency of exchange* in the knowledge economy takes the form of *intellectual property* - either as legally enforceable property such as copyrights, registered industrial designs, patents and trademarks, or the form of managerial 'know how' and trade secrets.

Legal Foundation

Intellectual property rights, in fact, provide the legal foundation for the industrial organization of the arts and sciences, i.e for the total knowledge industry. But legal systems are the product of specific cultures and different cultures recognize different creative rights. As well, in international law, intellectual property conventions require only 'national treatment', i.e. before the courts, the rights of a foreign creator are the same as those of a national. But such conventions do not require either harmonization or standardization.

In French-speaking and most Western European countries, *droits d'auteur* or author's rights are the equivalent of English common law copyright. The difference in the 'spirit of the law' between copyright and the civil code is significant (Vaver 1987: 82-83)

In this regard, and in addition to problems about agriculture, *GATT* negotiations concerning a new world trade agreement are floundering due to these differences. The civil code recognizes creators have *inherent and inalienable* moral rights extending far beyond common law copyright. But such moral rights are available only to individuals, i.e. they do not extend to legal entities such as business corporations. The American position in GATT negotiations is that such civil code rights be extended to corporate copyright holders. Europeans disagree (Morner 1991).

This trade dispute has implications not only for the global knowledge industry but for cultural sovereignty of the post-modern nation state. Two examples will demonstrate.

First, another tradition of creative rights exists among aboriginal or 'Fourth World' peoples. Native or 'collective' copyright is not yet embodied in international statute. But pressure for such rights is growing. Such rights are based on a collectivist concept of creation. To tribal peoples, a song, story or icon does not belong to an individual but to the collective. Rights may be exercised by only one individual in each generation - generally through matrilineal descent. There has even been a proposal placed before the U.S. Congress to convert Amerindian art into 'inalienable communal property' (Suro 1990: A1 & 13).

Second, there is a separate Arab Copyright Convention reflecting, to a degree, concepts and creative rights which emerge from the Islamic *Shar'ia* law, not from common law or civil code traditions concerning creators rights.

Physical Technology

Advances in physical technology result from research in the natural sciences and engineering. In the last few generations such research has resulted in creation of the aerospace, biotech, electronics and nuclear industries. It is accepted that this type of technological change leads to growth in national wealth. To the best of the author's knowledge, however, there are no empirical studies demonstrating a causal link between investment in natural science and engineering research and growth in national income. Theoretic and political belief, however, is very strong. Various terms have been used to describe what, at any given moment, is the most efficient physical technology. *Leading edge* has been used, as has *state of the art*.

Organizational Technology

Organizational technology - to motivate workers and managers and then to marry them with financial capital plant and equipment creating a successful business enterprise - embodies humanities and the social science knowledge. Advances and insights generated by HSS influences, among other things, the ability of a company or a country to innovate new products and processes. Two examples demonstrate.

First, the cost of impaired worker and management motivation is estimated at between 20 to 40% of the net national product of the United States (Liebenstein 1966; 1981). The phrase which is the touchstone for organizational success is in search of excellence.

Second, the new democracies of the former Soviet empire are requesting not just capital from the West, but also managerial 'know how' to establish profit-making enterprise and a market economy. The former Soviet Union might have been a world leader in the physical sciences, but its organizational technology was simply inadequate to survive the post-modern era.

Aesthetic Technology

Just as the physical and social sciences are the source of distinct technologies, art is the source of aesthetic technology.

Aesthetic technology is different from technical or functional design. It contributes *elegance*. Its impact on consumer behavior involves what has been called "the best looking thing that works" (Cwi 1985). If a consumer, in any given culture, does not like the way a product looks, she or he may not even try it.

The fact is that the best looking things that work tend to come from abroad, particularly from Europe. Why? Given capital plant and equipment in North America is as good as that in Europe, the answer is not superior European production technology. In fact, it results from a feedback between skilled consumers and producers resulting in superior design. As noted by Tibor Scitovsky in his path-breaking book, *The Joyless Economy*:

> The North American buyer of European imports benefits from the high standards which careful European shoppers' finicky demand imposes on their producers; he does not have to be a careful shopper himself. In other words, he can be what is known as a free rider, enjoying the benefits of other people's careful shopping without paying his share of the cost, in terms of time and effort, that careful and aggressive shopping involves. That explains why producers find it unprofitable to cater to his demand by trying to out-compete high quality imports, despite the often exorbitant price they fetch. Consumers seem willing to pay a high price, in terms of money, for the reputation of European imports; that is we pay cash to obtain high quality without having to pay for it in terms of careful shopping. (Scitovsky 1976: 178)

When the design advantage of Europe and Japan is combined with the wage advantage of the Third World, then American producers are left with a narrowing mid-range market. This combination of design and wage disadvantages partially explains the apparent de-industrialization of America. Improved productivity through robotics and new technology may lower costs of production, but only improved design will secure for American producers a competitive share of the highly profitable up-scale marketplace.

Beyond product design, art plays another crucial role in the economy, advertising - perhaps the most pervasive aspect of the information economy. It is generally forgotten that within the

ecology of capitalist realism, advertising is the lubricant of the market economy. And advertising involves the application of the literary, media, performing and visual arts to sell goods and services. Actors, dancers, singers, musicians, graphic artists, copywriters, and editors are employed to sell everything from fruit to nuts; from cars to computers, from beer to toilet paper.

The manipulation of consumer emotion's through advertising involves, among other things, the reasoned application of art to place products in an positive context (McCraken 1988). In this regard, global advertising agencies are struggling to gain economies of world scale while confronting the cultural specificity of global markets (*The Economist* May 6, 1989: 64).

This economic role of art has been identified by various research projects around the world:

> There is, then, another aspect to culture, namely good taste, good design and creative innovation, that should enable ... economies to compete effectively in the world economy... In this endeavour, higher quality implies an organic relationship between business and engineering, on the one hand, and design and craftsmanship on the other... High quality products, technologies, plants, homes, cities and locales require the long-run presence of creative artists of all kinds. To increase the long-run supply of artists... governments must support... the arts. The long-term return from investment... is real and substantial. In the absence of strong public support of this sector, [a country] will not reap these benefits. Governments at all levels should increase their contribution to their respective arts councils (Royal Commission 1985: 115-116).

Both organizational and aesthetic technology are, however, very sensitive to culture, custom and tradition. This may explain why there has been little investigation or appreciation of these technologies by mainstream economics.

Implications

The implication of the 'spiral ladder' for the knowledge economy is that creativity, *in all three domains of knowledge*, represents the ultimate economic resource. The importance of creativity as the ultimate economic resource was recently highlighted by Akio Morita, founder and chairman of Sony Corporation at the 1992 World Economic Forum. When asked how Sony dealt with competition, he answered: 'What competition? Sony invents and innovates new products: there is no competition".

Competitiveness can be achieved through creativity in NSE: it can also be achieved by HSS research leading to liberalization of historic religious restrictions on business; it can also be achieved by cultivating a distinctive aesthetic and establishing one's culture as a benchmark for global style and taste.

Whether basement inventor, experimental scientist in white lab coat, choreographer, novelist, painter or playwright, it is the creative act that generates the new knowledge that fuels the knowledge economy. At the core of this new economy is the buying and selling of new ideas, inventions, styles and techniques. Around the world, nation states are enhancing incentives for creativity through parallel rights, outside of international conventions, avoiding national treatment of foreigners.

Government may have a responsibility, i.e. Adam Smith identified infrastructure as a responsibility of government, to ensure production of knowledge is treated as the 21st century equivalent of canals, railways, roads and air transport infrastructure, i.e. Adam Smith (1776) identified infrastructure as a responsibility of government (Paquet 1990).

In a more philosophic vein, a community, region or nation will eventually run out of raw materials and lose comparative advantages based on traditional sources of wealth generation. Only creativity can conjure up a substitute which turns lead into gold, sand into silicon chips or a first novel into billions in book, movie, T-shirts, toys, records, tapes and other ancillary sales and royalties.

At the individual creator level, how much is one Georgio Armani, Agatha Christie or Thomas Edison worth to a community or a nation? Can business, government and the learning industry cultivate an environment in which creative talent (in all domains of knowledge) can come to flower?

But creativity is also required of cultures if they are to be competitive - in the short or long run. Hard competitiveness is often constrained by 'soft' factors such as ethical, historical, linguistic, religious and social values.

Each culture sees into the global village through its own window: each functions in its own paradigm: each has a distinct social genetic code or spiral ladder. In global terms, this requires what Maruyama once called 'paradigmatology' and now calls 'mindscapes' (Maruyama 1985).

Within each cultural mindscape lay opportunities and constraints on application of *NSE* knowledge, i.e. on attaining 'hard' competitiveness. Similarly, the ability to maintain a mindscape is related to the state of physical reality, e.g. food taboos fade quickly faced with famine. Or, put another way:

> As long as the environment permits, the organism repeats its activity habitually. A change in the environment produces an obstacle to habitual behavior, and a response is demanded. For the human being, part of the necessary response is to recognize the situation for the problem it is and envisage ways of resolving it satisfactorily (Sloan 1991).

Each culture needs to identify its own constraints and maximize within these limits. This requires 'honest' assessment of what is 'true' knowledge and what is cultural myopia. After assessment comes the hardest step: either a creative leap transcending cultural limitations, or acceptance of limitations with the hope that they may, perhaps, further long-term competitiveness.

Conclusions

In the study, the American arts industry was conceptually defined, measured with respect to statistical size and contribution to the economy and, finally, the significance of the arts was assessed within the context of national competitiveness and the emerging knowledge economy.

Definition

The arts industry is much broader than normally reported. If science, excluding the so-called human sciences, breaks down into three basic disciplines - biology, chemistry and physics: then art breaks down into four basic media of expression - the literary, media, performing and visual arts. Each uses a distinct medium of expression: the written word, the mechanically recorded sound and image, the live stage and the visual image. Each is, in turn, composed of many subdisciplines and schools based upon differences in style, technique and interpretation. In fact, artistic medium break down into as many subtle branches of expression as any of the physical sciences.

Like science, art is applied for many different purposes. The arts industry includes five distinct product segments. *The Fine Arts* are motivated by 'art-for-art's-sake'. They are the research and development segment of the industry and generate 'enlightenment'. It is in the fine arts that new talent and technique, scripts and scores, and images and styles are created and developed. Some results of fine arts 'R&D' are, later in the product cycle, adopted by other parts of the arts industry as well as by non-arts industries fostering new product designs, fashions and styles. Like pure science, fine art is not financially self-supporting; it depends on public and private patronage. As in science, a thousand experiments are needed if one is to become a box office smash. The right to fail is an essential artistic and scientific freedom.

The Amateur Arts are motivated by self-actualization and self-realization, including realization of one's cultural heritage. The amateur arts are part of the public sector (the education system), the nonprofit sector (institutions like local little theatre) and the profit sector (private teachers). They generate 'education' involving: arts education about how to make art: education through art as a distinct way of understanding the world - its cultures, peoples, problems and its goods and services: and, art as a cost-effective medical therapy of growing importance to an aging population.

The Entertainment Arts generate 'enjoyment'. America currently leads the world in entertainment. This sector of the industry is dominated by for-profit international media conglomerates with interests in television, film, music, video and print media. In 1988, the five largest firms in the world had combined revenues of $45 billion accounting for 18% of the total $250 billion worldwide media industry. Entertainment programming is the second largest net export of the United States, after defense products. But unlike other major industries, entertainment spends *zero* percentage of its revenues on 'R&D', i.e. support for fine art.

The Applied Arts include advertising, architecture, the crafts, jewelry and fashion as well as product and interior design. They marry aesthetic to utilitarian values. They generate 'elegance'. From buildings to urban planning; from product design to effective advertising; from corporate 'imaging' to designer fashion: the applied arts have the most pervasive and significant economic implications of any sector of the arts industry

The Heritage Arts subsume each type of art as a residual of contemporary creation preserved for and/or by subsequent generations. They feed back on contemporary art by establishing standards and inspiring contemporary creators. They generate 'enrichment' marrying scarcity and

aesthetic values. In fact, of all financial assets, between 1969 and 1989, heritage art had the highest rate of return.

Size

To measure the statistical size of the arts industry, three sets of data were used. These included: the Input/Output Matrix for the U.S. economy; Standard Industrial Classification data generated by the Department of Commerce: and, assorted business and financial statistics.

Input/Output Matrix

The input/output matrix is a standard tool of economics. It reports use (inputs) and production (outputs) of commodities. Inclusion of fabrics, textiles, clothing, furniture and leather goods, along with more obvious arts industries, is supported by a recent study of the American copyright industry and by Alfred Lord Marshall's observation that, in these industries, it is "every day more true that it is the pattern which sells the things". In order not to overstate the size of the arts industry, however, an 'arts factor' was applied to 'net out' non-arts components of 'marginal' arts industries. Accordingly, two ses of data are presented - gross and net.

In 1982, the arts industry generated nearly $304 billion in gross production, or 9.6% of Gross National Product (GNP). Applying the 'arts factor', net arts production was $162 billion, or 5.1% of GNP.

The arts industry made gross purchases of $164.8 or 5.2% of GNP from other industries. Applying the 'arts factor', net purchases amounted to almost $80 billion, or 2.5% of GNP.

The arts industry had gross sales of $262.1 billion or 8.3% of GNP, and net sales of $130.4 billion, or 4.1% of GNP.

Gross arts exports were $12 billion or 5% of total exports; net exports were $7 billion or 3% of total exports. Gross arts imports were $37 billion or 12% of all imports; net imports were $14 billion, or 5% of total imports. The gross arts trade deficit was $25 billion, or 45% of the total trade deficit: the net arts trade deficit was $7 billion, or 13% of the total trade deficit.

Standard Industrial Classification

The Standard Industrial Classification (SIC) is the framework through which economic statistics are reported by the Department of Commerce. As with the input/output matrix estimates, the 'arts factor' was applied to 'marginal' arts industries. Gross industrial output of the arts industry was $443 billion, or 8.5% of GNP: net output was $315 billion, or 6% of GNP.

Gross value added by the arts industry to the economy was $232 billion, or 4.4% of GNP: net value added was $166 billion, or 3.2% of GNP.

Gross employment in the arts industry was 5.2 million, or 4.4% of the total American workforce; net employment was 3.1 million, or 2.7% of the workforce.

Significance

In the last decade, an old word has broken through into public consciousness: *competitiveness*. Competitiveness has, of course, always been with us. But, contemporary usage extends traditional mass market price competition to 'working smarter'. Competitiveness applies to all business enterprise, levels of government and nonprofit agencies and workers of the post-modern nation state. The drive towards national competitiveness is a major external force acting upon the arts industry.

Competitiveness promises prosperity but it is also a game in which some win and some lose. In fact, penetration of competitiveness into the marketplace of ideas has quenched the last flickering embers of the '60s generation's *revolution of rising expectations*.

Scientific Context

Competitiveness is linked with creation, transmission and timely application of new knowledge resulting in technological advance. Since the turn of this century, more than two-thirds of growth in national income

per worker is attributable to technological advance. But our understanding of its nature is strictly limited. This reflects that knowledge traditionally considered relevant for technological advance was restricted to the natural sciences and engineering. Only passing reference is usually made to 'softer' forms of 'knowing'.

But 'ways of knowing' are like the facets of a gemstone, some twinkle in a certain light while others remain dim or dark to view. Various attempts have been made to contextualize science by aligning it with other facets of knowledge and to thereby break, what some believe to be, Western civilization's Faustian bargain with science.

Political Context

Contextualization of science is not an 'academic' question. Scientific research today is being restricted by, among other forces, religious 'knowledge', e.g. fetal tissue and 'abortion' pill research.

New ways of knowing are, however, moving into focus. 'Women's knowledge' is now being *institutionalized* throughout society. Similarly, ecology is a 'holistic' vision firing the public imagination and leading to mass movements and institutional change. It rejects the reductive, mechanistic approach of the traditional physical sciences and offers instead a *relational* perspective of environmental systems.

Intellectual Context

There is also a deepening crisis in the global learning industry. Like other sectors, it is confronting a changing political context in which ecological, ethnic, religious and women's knowledge is being 'legitimized'. In addition, it faces five internal challenges.

First, there is growing questioning of the paramount position granted to the natural sciences and the claim to having their standards of validation apply - no matter the object or the subject of investigation. More generally, there is unrest about the hierarchical nature of politics within the learning industry.

Second, 'reality' is now being recognized as *socially constructed* but the central concepts of social life - choice and volition - appear incompatible with those of scientific prediction - laws of motion and probability.

Third, doubts have arisen due to the failure of Western assistance to many 'developing' nations suggesting scientific and technical knowledge was insufficient, on its own, to engender the developmental process, e.g. contrast experiences of tribal Africa and Confucian Asia.

Fourth, there is growing tension between vocation and education. At a time when industry and government is calling for more scientific and technical education, declining enrollment in these subject has, at best, bottomed out.

And fifth, there is increasing realization that learning is the ultimate resource but that the hierarchy of knowledge remains unchanged and has failed to accommodate important elements of learning other than literacy and numeracy.

From as early as Galileo, a traditional hierarchy of knowledge distinguished between three levels: primary, secondary and tertiary knowledge. Primary concerns *facts or quantities*. Secondary or *qualities* pertains to sensations such as colour, taste, smell and form as well as larger concatenations of these qualities. Tertiary knowledge, or *values*, are said not to be perceivable from the outside world but are rather innate ideas. Of the three, only primary knowledge is accessible to the scientific method.

Post-Modern Context

One way to refresh the traditional model of knowledge is to update it, for example, by using the famous image of the DNA double helix - the spiral ladder of life. The resulting model could be called 'the spiral ladder of competitiveness'. It assumes *three uses of knowledge*:

- knowledge-for-knowledge sake;
- knowledge for decision and profit; and,

• knowledge for democracy, i.e. an informed electorate is a prerequisite for effective democracy.

The model also assumes there are *three domains of knowledge*: the natural science and engineering (*NSE*); the humanities and social sciences (*HSS*); and, the arts.

NSE is generated by the scientific method characterized by replicability and objective testing. It corresponds to primary knowledge of quantities or facts. It involves a search for objective knowledge to understand and control the physical universe. Progressiveness is vertical, i.e. new knowledge displaces old, and by *intolerance of difference*, i.e. progress is a process of reducing error, replicability is all.

Both the humanities and the social sciences (*HSS*) are concerned with understanding the human world. For the humanities, this is essentially sufficient - understanding is all. For the social sciences, however, understanding can be extended to control, i.e. social engineering. *HSS* corresponds, roughly, with secondary knowledge of qualities. *HSS* also involves assessment of interactions between natural and human environments, i.e. *HSS* searches for reconciliation between objective and subjective truth.

HSS knowledge is generated by 'research'. While statistics are used in social science, a modified scientific method must be applied because even basic tenets of the social sciences cannot be quantitatively tested.

Furthermore, unlike *NSE*, *HSS* research is relative to time and space, i.e. *HSS* knowledge is not value-free. Progressiveness of *HSS* is not vertical. New knowledge does not necessarily displace the old. In fact, *HSS* progress is a spiral on which ascent is often preceded by descent back to the past, e.g. to the politics of Plato or to Shakespeare's insight into the human condition. Progress in *HSS* is also characterized by *increasing tolerance of difference*, i.e. all things being equal, the more one knows of different countries, cultures and peoples, then the more tolerant of differences one becomes.

If natural science is the study of the outer, material world: then art is the study of the inner, subjective world. If the sciences involve the search for objective truth, then the arts involve the search for subjective, value-laden truth. Scientific knowledge depreciates, while knowledge in the arts tends to appreciate through time. If science uses reductive methods, then art generates aesthetic knowledge - a *gestalt* sense *of wholeness* or, *of rightness*.

Metaphorically, the spiral ladder is held together by interactions of the three domains of knowledge. Each plays a role in defining a culture. *NSE* forms the hard rungs of the ladder permitting reality testing of values and beliefs, e.g. food taboos tend to fade fast in the face of famine. *NSE* provides a culture with the 'how to' change the material world. *HSS*, on the other hand, tells a culture 'what' is worth doing relative to it's value set.

In this way, *HSS* constrains *NSE*. Similarly, art contextualizes *NSE* and *HSS* providing them with emotional valuation of 'rightness' - ugly truths, however, too often hide from public view.

Economic Context

The three domains of knowledge generate distinct types of technology. In simple terms, physical science generates technology of the 'hand'; the humanities and the social sciences generate technology of the 'head'; and art generates technology of the 'heart'.

Intellectual property rights provide the legal foundation for the industrial organization of the arts and sciences. But legal systems are products of specific cultures and different cultures recognize differing creative rights. In this regard, and in addition to problems about agriculture, *GATT* negotiations are floundering due to these differences. This trade dispute has implications not only for the global knowledge industry but for cultural sovereignty of the post-modern nation state.

Advances in physical technology result from research in natural science and engineering. It is believed, but not 'scientifically' proven, that such research leads to growth in national wealth.

Organizational technology - to motivate workers and managers and then to marry them with financial capital plant and equipment creating a successful business enterprise - embodies humanities and social science knowledge. Two examples demonstrate. First, the cost of impaired worker and management motivation is estimated at between 20 to 40% of the net national product of the United States. Second, the new democracies of the former Soviet empire are requesting not just capital from the West, but also managerial 'know how' to establish profit-making enterprise and a market economy.

Art is the source of aesthetic technology. Aesthetic technology is different from technical or functional design. Its impact on consumer behavior involves *elegance*. If a consumer, in any given culture, does not like the way a product looks, she or he may not even try it. Beyond product design, art plays another crucial role in the economy, advertising - perhaps the most pervasive aspect of the emerging knowledge economy, and one in which global advertising agencies are struggling to gain economies of world scale while confronting the cultural specificity of global markets.

The implication of the 'spiral ladder' is that creativity, *in all three domains of knowledge*, is the ultimate resource. Competitiveness can be achieved through creativity in *NSE*; it can be achieved by *HSS* research leading to liberalization of religious restrictions on business; it can be achieved by cultivating a distinctive aesthetic and establishing one's culture as a benchmark for global style and taste. At the individual creator level, how much is one Georgio Armani, Agatha Christie or Thomas Edison worth to a community or a nation? Can business, government and the learning industry cultivate an environment in which creative talent (in all domains of knowledge) can come to flower?

But creativity is also required of cultures if they are to become competitive. Hard competitiveness is constrained by 'soft' factors such as ethical, historical, linguistic, religious and social values. Together, these constraints create a distinct cultural 'mindscape'. Each culture needs to identify its own constraints and maximize within these limits. This requires 'honest' assessment of what is 'true' knowledge and what is cultural myopia. After assessment comes the hardest step: either a creative leap transcending limitations or acceptance of limitations with the hope that they may, perhaps, further long-term competitiveness.

In summary, the arts represent a very important industrial sectors of the American econmy. They contribute between 5% and 10% of Gross National Product, measured net and gross of marginal arts industries such as clothing and furniture, respectively.

The arts industry accounts for between 3% and 5% of all Ametrican exports, and for between 5% and 10% of all imports. Relative to the total U.S. trade deficit, the arts industry contributes between 13% and 45% of the deficit, measured net and gross of marginal arts industries such as clothing and furniture, respectively

Art is also one of the three principal domains of knowledge upon which national competitiveness depends. Traditionally it was only natural science and engineering knowledge was thought to contributed to economic growth and development. But the concept of competitiveness has been extended to embrace the 'soft side' including attitudes, education, motivation and values reflecting the shift towards a knowledge-based economy. This extension allows for inclusion, within the calculus of the economy, of humanities and social scientific knowledge as well as the arts.

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